JANUARY 30, 1961

PAPER TRADE JOURNAL

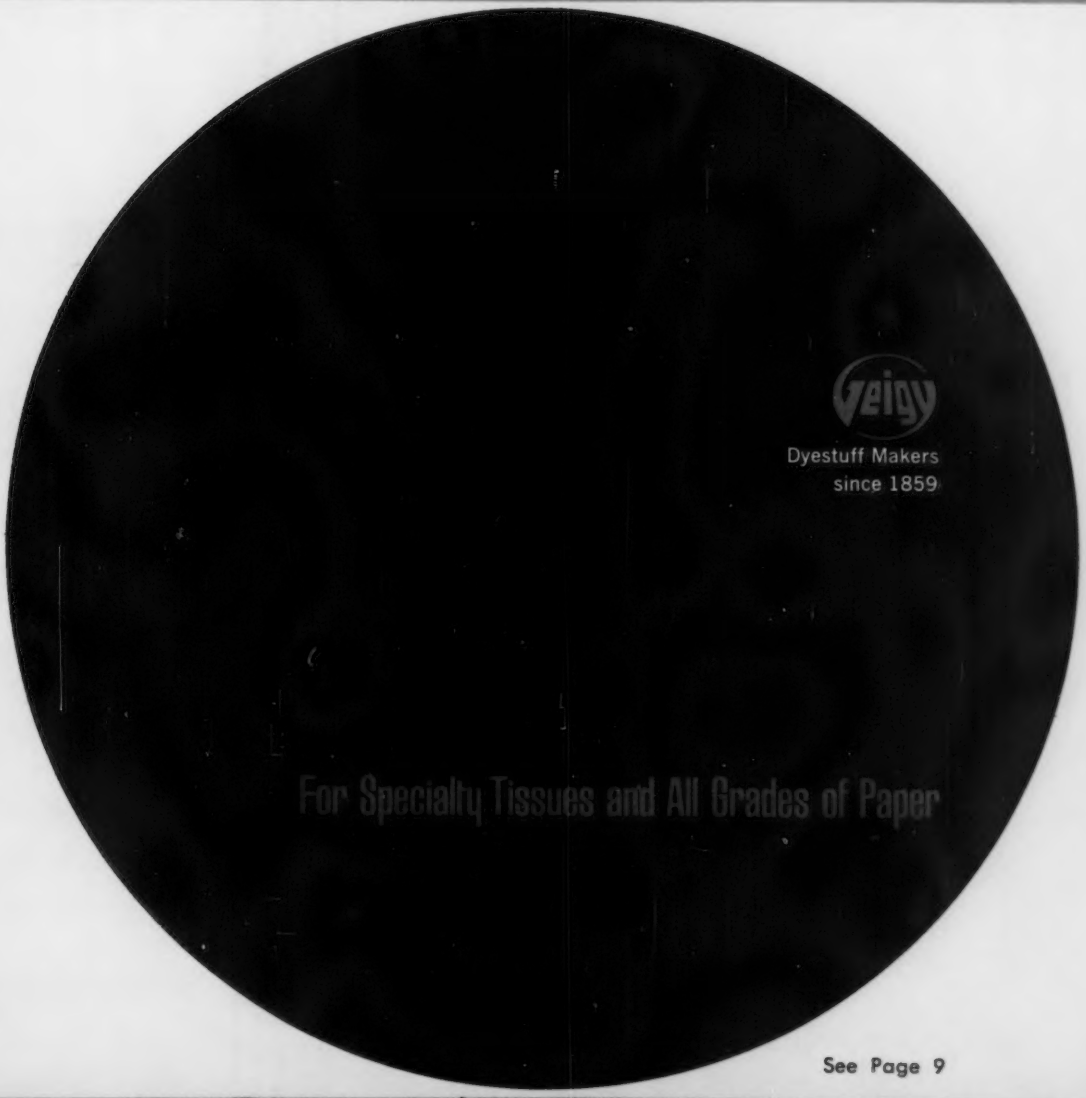
Details Revealed on PCA's Fluff Drying and Baling of Market Pulp

Brown's New Finishing Room Stars Sheeter with Turntable Rollstand

WMU Conference Peruses Latest in Blade, Curtain, and Roll Coating

Five Criteria for Satisfactory Service from Centrifugal Pumps

Contents of the Week, pages 4-5



See Page 9

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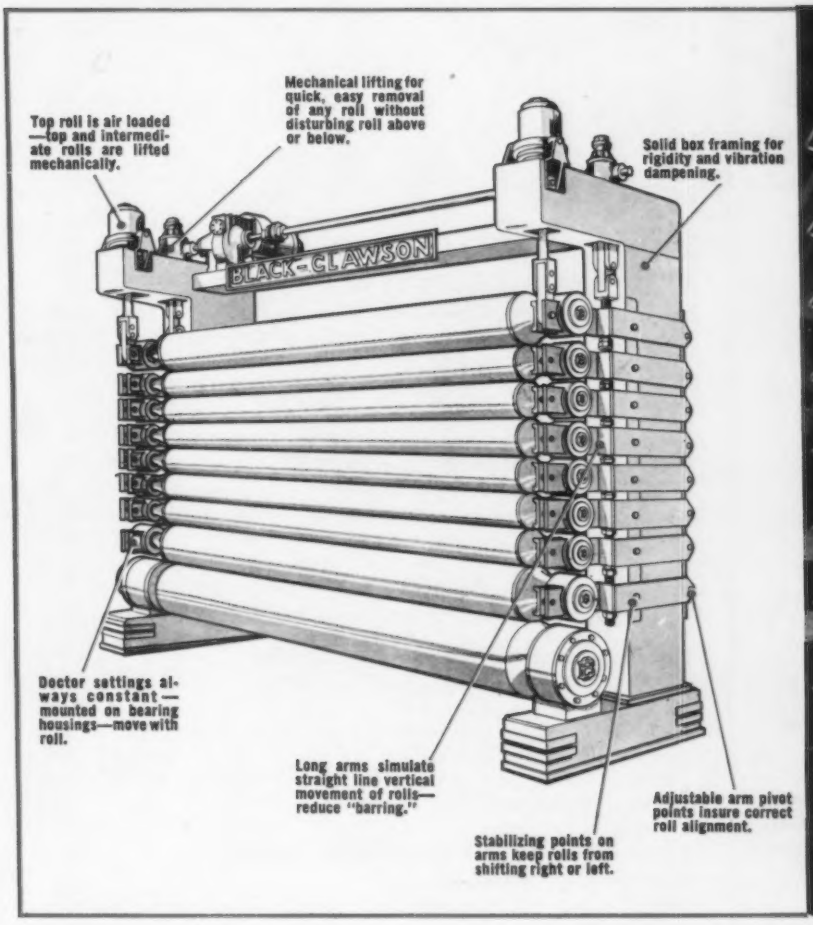
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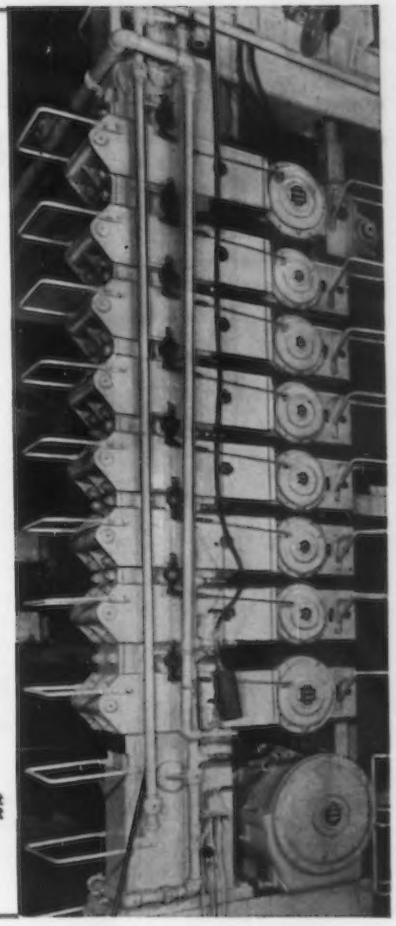

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FEATURES OF THE WEEK

How Fluff-Drying and High-Density Baling of Market Pulp Works for PCA

This is the first detailed description of flash drying and baling of fluffed pulp at the Packaging Corp., Filer City, Mich., mill. The new system radically departs from the conventional, and more costly, fourdrinier method. **20**

Five Criteria For Keeping Centrifugal Pumps in Service

Why do these usually dependable machines sometime fail? The answer lies in comparing the pump's actual operation to its design criteria. Each of these is discussed in detail —E. D. Schwandt, John W. Felton **24**

Vigorous Growth of On-Machine Coating

On-Machine coated paper has grown 475% from 1945 to 1960 and from four to twelve per cent of total paper production. A large proportion of the output remains concentrated in the North Central and Northeast regions—John J. Bartosiewicz **29**

Nibroc Offset Sales Prompt Major Finishing Expansion by Brown Co.

An S-shaped flow of jumbo rolls through a turntable backstand, automatic sheet cutter, trimmers, and carton sealers has doubled production and delivery of these fine papers —Robert Strachan **30**

Stress Coating Advances at WMU Conference **33**

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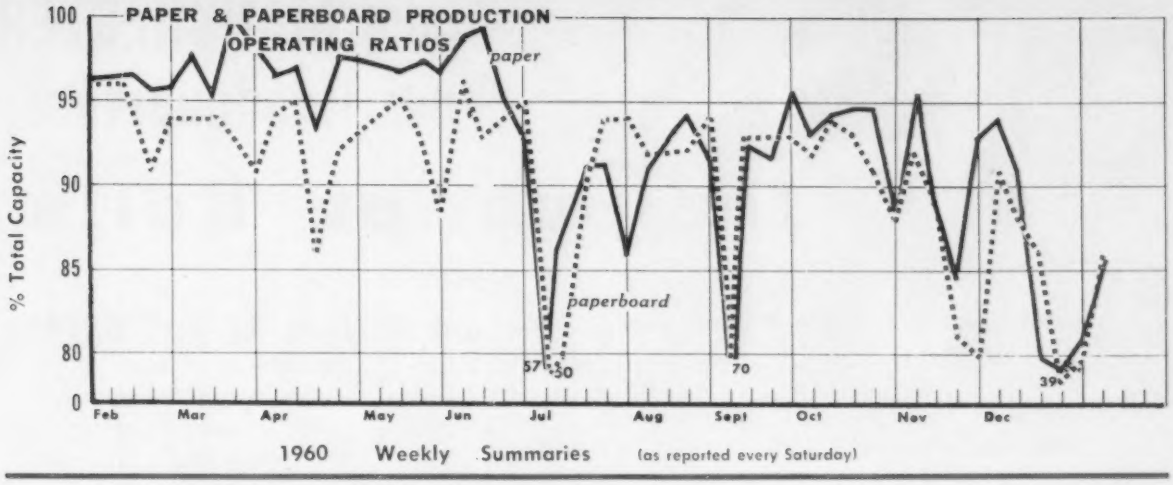

NEWS OF THE WEEK

New Mill for Photo Paper to be built in N. Y. State . . . Expansion by Charmin Includes new Tissue Machine . . . Hammermill to Acquire Burgess Envelope . . . Weyerhaeuser and Hamilton to Merge

KVP Sutherland Chooses 3 Executive V-P's . . . Spaulding Fibre Ups Plant Management Personnel . . . Hudson P&P Names Hill Research Engineer . . . Keyes Fibre Names Assistant to President

Sonoco Opening Branch Plant in Ravenna . . . Nashua Corp. Announces Sales Appointments . . . Lily-Tulip Consolidates Eastern Sales Regions . . . Phelan Retire From Container Corp. Post

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REMEMBER THESE DATES

February 6-7	Flexographic Technical Association. Third Annual Meeting and Technical Forum, Hotel Roosevelt, New York
February 20-23	Paper Week in New York
March 26-29	National Paper Trade Ass'n, Annual Convention, Waldorf-Astoria Hotel, New York

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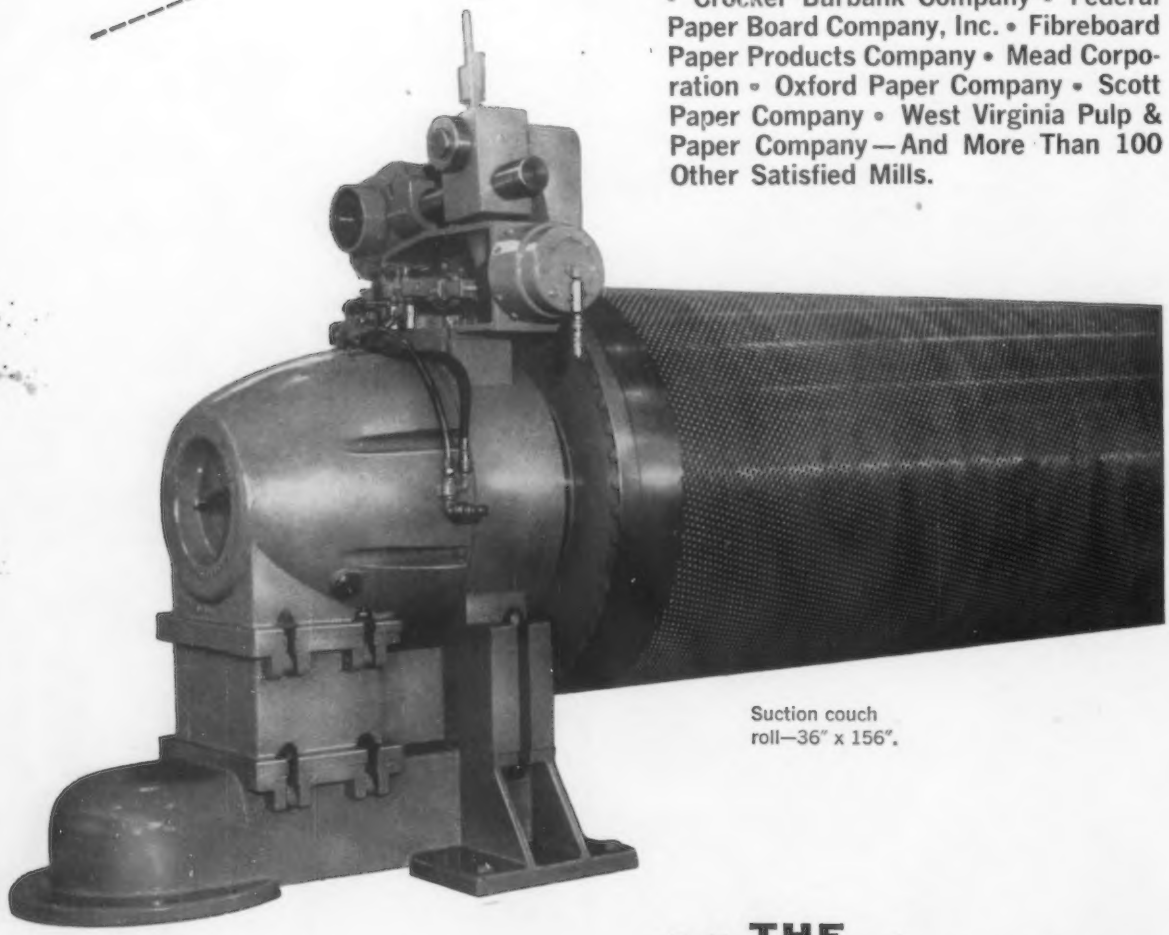

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Trends

Editor Evans Report—Date Line: Montreal

Roundup on Canadian Pulp and Paper Industry

"During the past year total output of the Canadian Pulp and Paper Industry once again exceeded all previous records," stated R. M. Fowler, president of the Canadian Pulp and Paper Association in his annual report on January 26th. Overall production in 1960 increased by some 5% from 1959. However, during the year most sections of the industry ran at somewhat less than full capacity, but operating ratios show considerable improvement over 1959 despite the modest amount of new capacity which came into operation.

Exports Big Leader In 1960

The exporting sector of the Canadian industry which accounts for about 80% of the total output, benefited in 1960 from a decline in the premium on the Canadian dollar. However, the entire industry continues to be affected by the trends towards higher cost.

Pulp Production and Exports Set New Records

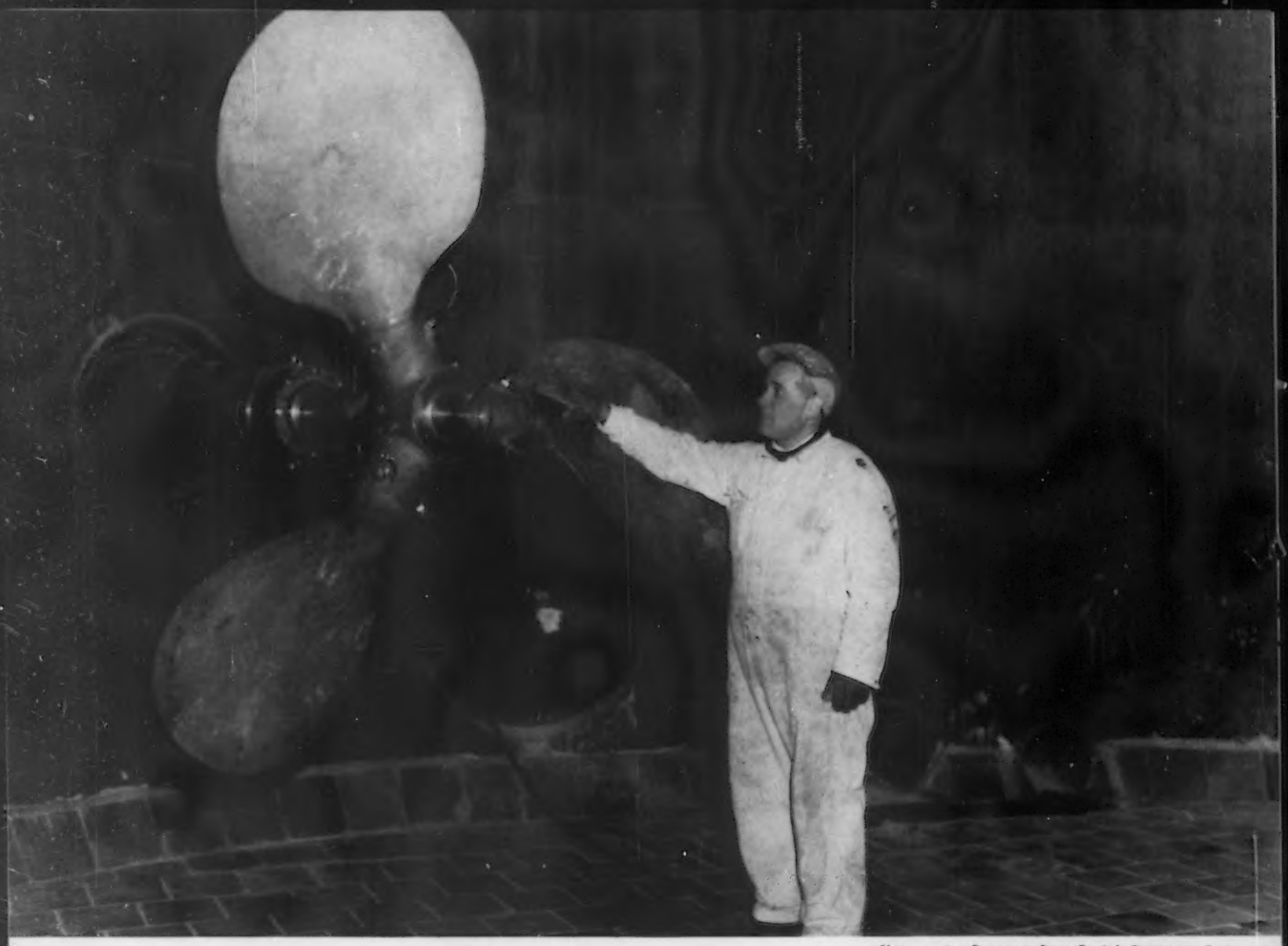
Canadian production of wood pulp set a new record in 1960. Up 5% from the previous year, the increase reflected both higher production of paper and paperboard and larger pulp exports. This was shared by all grades except dissolving pulps.

Newsprint Also Sets Record in 1960

Newsprint production for the year was also at an all time high, about 5% above 1959 and 4% above the previous big year of 1956. The increase in output was the largest since 1947 and was also more than the amount of new capacity which became available in Canada during 1960. The result was that mills report an average operating ratio of 88.5% compared with 85.0% in 1959.

Other Paper and Board Improves Moderately

Production of paperboard increased by about 4% during the year and established a new record. Demand was especially strong in containerboard. Output of boxboard was very close to the level of 1959. Paperboard exports accounted for approximately 10% of the output and increased by about 40% from 1959. The increase was largely in shipment of linerboard and corrugating medium through the United Kingdom. Output of wrapping paper during 1960 was fractionally below the 1959 level, due to such advance factors as the continuing trend to pulp shipments for other uses and the decline in the building trades. Demand for fine papers continues strong and shipments for the year were up nearly 4% from 1959, establishing a new record for this section of the Canadian industry.



Photos courtesy Donnacona Paper Co. Ltd., Donnacona, Que.

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PJT | PAPER TRADE JOURNAL

WEEK OF JANUARY 30, 1961

Weyerhaeuser and Hamilton to Merge

Hamilton Paper Co., an important producer of bond, offset, text and reproduction papers, has announced that agreement has been reached with Weyerhaeuser Co. for the merger of Hamilton with Weyerhaeuser. All Hamilton assets would be exchanged for Weyerhaeuser stock on the basis of one share of Hamilton for nine-tenths of a share of Weyerhaeuser.

Lane Taylor, president of Hamilton, said the merger was subject to the approval of Hamilton stockholders.

Norton Clapp, president of Weyerhaeuser, said the merger marked his company's entrance into a new segment of the paper industry. He said that it will in no way affect Weyerhaeuser's traditional business as a major supplier of various grades of bleached pulp for the paper industry and special pulps for chemical and other uses.

The business of Hamilton will continue to be operated under the same management, Mr. Taylor stated. It will become a subsidiary of the Weyerhaeuser Co.

Hamilton mills are located at Miquon, Pa., and Plainwell, Mich.

New Mill for Photo Paper to be Built in N.Y. State

Maxwell Bardeen, president of Simpson Lee Paper Co., in an interview with Paper Trade Journal, confirmed a report that his company will form a partnership with a German manufacturer to produce photographic paper at a new paper mill to be built in eastern New York State.

Felix Schoeller, Jr., Paper Co. of Osnabruck, Germany, producers of photographic papers for 75 years with markets all over the world, including the United States, have agreed to share administrative responsibility and to provide half the capital to finance the new mill.

Mr. Bardeen, who will be president of the new company, said sites are still being investigated in eastern New York with the aim of finding one meeting the requirements of water, transportation and soil structure.

The new mill will have one machine at the start, with capacity for adding another later. According to Mr. Bardeen, the paper machine will be designed for the production of photographic papers at the rate of about 50 tons per day. Primary aim will be the control of minerals and other impurities that have caused trouble in the manufacture of these special types of paper at the firm's Vicksburg, Mich., plant. Target date for start of production is 1963.

Expansion by Charmin Includes New Tissue Machine

The Charmin Paper Products Co. is scheduling expansion of its paper making facilities, it was announced by M. J. Auchter, vice president in charge of manufacturing. He said a new paper machine, auxiliary equipment and building will be constructed beginning this year at Charmin's Division B in Green Bay, Wis.

The project is tentatively expected to be completed late in 1962. The estimated time schedule calls for early stages of building construction by late this spring or early summer.

Consideration is being given to locating the new building in close proximity to the existing paper mill and converting buildings on the company's Division B property. In addition to housing the new paper machine, the building will contain necessary repulping equipment.

The new Yankee paper machine will be designated as No. 10. It is expected to be the largest of Charmin's paper machines. Production of either two-ply or single-ply tissue will be possible on the machine.

The installation will bring the company's total number of paper machines to 10. During 1960, two machines, Nos. 8 and 9, were completed at the firm's Cheboygan, Mich., division. Presently in Green Bay there are two paper machines at Division B and five at Division A. Remodeling of one of the Division A machines was completed recently and extensive changes are currently in progress on another.

Hammermill to Acquire Burgess Envelope

Hammermill Paper Co. said it will acquire Burgess Envelope Co., Inc., Chicago, in exchange for "up to 24,000 shares" of Hammermill common stock.

Donald S. Leslie, president of Hammermill, and Tom Burgess, president of Burgess, said common stockholders of Burgess Envelope have agreed to accept the offer. Burgess has annual sales of about $1,500,000 and manufactures a complete line of envelopes in Chicago, the announcement said.

Burgess will be the fourth envelope maker Hammermill has acquired in seven months. The acquisition gives Hammermill plants to convert its paper stock into envelopes in four major regions of the country. Last September, Hammermill purchased Union Envelope Co., Richmond, Va., and gained complete control of Old Colony Envelope Co., Westfield, Mass. Last November, Hammermill acquired Coast Envelope Co., Los Angeles.

The four envelope manufacturers have combined annual sales of about $18.5 million. Hammermill had 1959 sales of $61,378,285. Hammermill began acquiring envelope manufacturers shortly after a proposed merger with U. S. Envelope Co. was blocked.

B.C. Forests Products Plans Newsprint Mill on Vancouver Island

British Columbia Forest Products, Ltd., has announced its decision to build a newsprint mill. The decision was made at a meeting of the directors following the annual meeting of shareholders January 16. The new mill will be built at Crofton on Vancouver Island, adjacent to the company's pulp mill, will cost approximately $25,000,000, and will have a capacity of 350 tons per day. Plans for construction are already under way and actual work should commence by the end of the year pointing towards a start-up of the machine in early 1964.

In making the announcement C. D. Dickey, Jr., president of British Columbia Forest Products, Ltd., stated "It is a natural step in our policy of integration and this project extends our utilization of the timber supply of the company. The decision to take this step is a positive demonstration of our faith in the business climate of the Province of British Columbia and in the availability of power and other resources required for the operation of such a mill. It is our intention to build a very modern mill, capable of supplying the highest quality paper to the publishing industry."

Mr. Dickey stated that when the project is completed the company will have invested a total of $75,000,000 in the Crofton-Duncan area. Surveys and studies conducted by the company have confirmed that this area is an ideal site for such an expansion. The company presently employs 400 men at the big bleached kraft pulp mill at Crofton and approximately 2,500 others at logging operations, sawmills, a plywood and veneer mill in the coastal area.

Chesapeake to Acquire Baltimore Paper Box

The Baltimore Paper Box Co. and The Chesapeake Corp. of Virginia have jointly announced that agreement has been reached making it possible for Chesapeake to acquire the assets of the Baltimore firm for an undisclosed amount of cash.

The announcement was made by H. B. Catzen, president of Baltimore Paper Box Co., and Sture G. Olsson, president and general manager of Chesapeake.

The present management will continue to operate Baltimore Paper Box, except for H. B. Catzen, who will retire after 35 years of association with the corrugated container company.

The Chesapeake Corp., whose mill began operations in West Point in 1914, manufactures unbleached kraft pulp, paper, paperboard, and specialties.

Baltimore Paper Box was founded in 1906 by the late Wolfe Catzen as a corrugated, set-up and folding box plant. His son, Bertram H. Catzen, was president until his death in 1951.

The company discontinued the folding box operation in the late 1930's and the set-up box operation in the middle 1950's, and now manufactures corrugated containers and specialties.

Celgar Mill Now in Operation

Two thousand tons of unbleached pulp has been shipped by Celgar from its new mill at Castlegar, B. C., according to T. N. Beaupre, president of the parent Columbia Cellulose Co. The mill under agreement with the B. C. Government was to be in production by March 1, 1961. The company has bettered this deadline.

There are 15,000 units of chips stockpiled at the Celgar plant and the company is now starting its bleaching operation to produce bleached kraft production.

The pulp mill has 500 tons daily capacity.

Kennebec Takes Option on Scott Madison, Me., Plant

Kennebec River Pulp & Paper Co. has taken an option to buy Scott Paper Co.'s groundwood pulp mill in Madison, Me. The transaction culminates several months of negotiations. It was not prompted by the Federal Trade Commission decision of December 16, 1960, that orders Scott to divest itself of certain properties. Scott will appeal the FTC decision in Federal court. Kennebec will have until Aug. 3, 1961, to exercise the option. The Kennebec-Scott agreement deals exclusively with Scott's Madison mill and the water rights connected with it; Scott's pulp and paper mills in Winslow, Me., are not involved.

If Kennebec were to exercise the option, it would plan to continue to run the mill, and to integrate the facility into the company's existing pulp and paper mill in Madison. Scott's Madison mill is a significant factor in the economy of the region since it employs some 80 people and buys a considerable amount of pulpwood in the surrounding area. Kennebec would expect to offer employment to a substantial number of Scott employes in Madison if it acquires the mill.

Dominion Tar Offers to Buy Howard Smith Shares

Howard Smith Paper Mills, Ltd., shareholders shortly will receive an offer from Dominion Tar & Chemical Co., Ltd., to exchange their shares on the basis of 2½ Dominion Tar shares for each share of Howard Smith. Dominion Tar in making the announcement said it has held a substantial share interest in Howard Smith Paper for several years and at present owns 61.8 per cent of the outstanding common shares.

Late News Flash: Dominion Tar on Jan. 24 announced an offer to purchase all outstanding shares of St. Lawrence Corp., Ltd., one of Canada's larger firms with several major mills and a number of box plants.

Paper and Paperboard Production

The American Paper and Pulp Association reported the ratio of the United States paper production to mill capacity for the week ending January 14, 1961, at 90.6 per cent, compared with 81.3 per cent, revised, for the preceding week. The ratio was 97.4 per cent for the corresponding week a year ago. The capacity base was raised 3½% as of January 1, 1961, over that used in the last six months of 1960.

The National Paperboard Association reported the paperboard production ratio for the week ending January 14, 1961, at 92 per cent, compared with 77 per cent for the preceding week and 97 per cent for the corresponding week a year ago.

(Detailed Statistics on page 43)

Drastic Changes in NPTA Meeting and Exhibit Policies

A major change in future convention and exhibit policy of The National Paper Trade Ass'n., has been announced by the association's president, Floyd H. Blackman, Stone & Forsyth Co., Cambridge, and Convention Planning Committee chairman, John R. Halkyard, Carter Rice Storrs & Bement, Inc., Boston.

The board of directors recently authorized the association to enter into negotiations with the new Americana of New York hotel, presently being constructed on Seventh Avenue between 52nd and 53rd Streets, one block west of Radio City, New York, and final arrangements have been completed.

The hotel will open in 1962, and N.P.T.A. will hold its first combined convention and exhibit there in September, 1963. The Americana of New York will be the tallest hotel structure in the world, rising 50 stories, and containing 2,000 rooms and suites. It is owned by Loew's Theatres, Inc., and will be operated under the direction of Tisch Hotels, Inc., owners of the famed Americana Hotel in Bal Harbour, Miami Beach.

Beginning in 1963, convention exhibits, sponsored by N.P.T.A., will alternate annually between the Americana of New York and The Conrad Hilton hotel in Chicago. This new arrangement will maintain the association's present policy of presenting one exhibit a year, but will have the advantage of bringing the exhibit to the East Coast and to the Midwest on an every-other-year basis.

Another innovation pertaining to spring conventions, has been announced by President Blackman and Mr. Halkyard. Beginning in March 1963, annual spring conventions of the association (without exhibits) will leave The Waldorf-Astoria in New York City, and be held in cities on the West Coast, in the Southwest, the South, and the Southeast.

"This procedure will enable N.P.T.A. to place its convention meetings in important areas of the country, and replaces the 58-year tradition of the organization in holding conventions only in New York and Chicago," Mr. Blackman said.

"With the tremendous growth of regions of the country outside the East and the Midwest, our board of directors felt that the time has come when appropriate recognition of these regions should be given," he added.

During 1961 and 1962, the annual spring conventions will be held in the Waldorf in New York (with no exhibits), and the fall convention (with exhibits) will be held at The Conrad Hilton in Chicago.

N.A. Newsprint Output Shows Dec. Loss, 1960 Gain

Production of newsprint in North America during December 1960 amounted to 692,647 tons and was 1.8 per cent below the December 1959 volume. Shipments totaled 725,477 tons in December 1960 and were 0.9 per cent above shipments in the same month of 1959. According to the Newsprint Service Bureau, output in the United States amounted to 158,750 tons while shipments totaled 167,424 tons, and comparison with December 1959 showed a loss of 5.0 per cent and a gain of 0.1 per cent, respectively. Canadian production of 533,897 tons was 0.8 percent under the December 1959 level while shipments of 558,053 tons showed an increase of 1.1 per cent.

Production of newsprint paper in North America in 1960 amounted to a record 8,777,033 tons, which was 418,730 tons or 5.0 per cent above the hitherto peak level attained in 1959. Output of United States mills in 1960 reached a historical high of 2,038,422 tons and was 74,291 tons or 3.8 per cent more than the volume produced a year earlier. Canadian production in 1960 totaled 6,738,611 tons—an all-time annual high—and was 344,439 tons or 5.4 per cent greater than in the preceding year.

FPBA to Hold 1961 Annual Meeting in Chicago

What makes for success in the folding carton industry will be the theme of the first general session of the 1961 annual meeting of the Folding Paper Box Ass'n. of America. The meeting will be held March 20-23 at the Drake Hotel, Chicago.

Preceding the opening session there will be seminars on "A Profits Improvement Program—Cost Reduction" conducted in the fields of labor, production and cost accounting.

The 1961 Folding Carton Competition and educational exhibits will be opened at 9 a.m. March 20 and announcement of the 100 best cartons of the year will be made Tuesday afternoon, March 21. All entries in the competition will be on public display in the hotel's French room on March 23.

Wednesday's sessions will be devoted to the industry's management ratios report and a statistics presentation.

"George hates to stick his neck out."

PAPER PEOPLE

E. N. Hunter

H. R. O'Donnell

KVP Sutherland Chooses 3 Executive V-P's

R. D. Caine

Three executive vice presidents to head the KVP Sutherland Paper Company's major divisions were named by the firm's board of directors.

In addition, President Dwight L. Stocker and 11 other officers were re-elected to the offices they had held during the first year of the firm's operation since the merger of the KVP Co. and Sutherland Paper Co. Jan. 4, 1960.

Those named to the key division posts are:

E. Norval Hunter, of Toronto, Ont., senior executive vice president in charge of Canadian operations;

Robert D. Caine, executive vice president in charge of the KVP division; and

Hubert R. O'Donnell, executive vice president in charge of the Sutherland Division.

Mr. Hunter, a native of Canada and University of Manitoba graduate, joined the KVP Co. in 1944 as assistant to the president in charge of rehabilitation of the Espanola, Ont., mill.

He became a KVP Co. director and vice president in 1951, and first vice president in 1955. He was named a director and first vice president of the KVP Sutherland Paper Co. a year ago.

Mr. Caine, a native of Ionia, attended Michigan State University before joining the KVP Co. in Kalamazoo in 1928. He managed KVP's Devon, Pa., plant from 1939-44, returned to Kalamazoo in 1944 as manager of converting operations, became manager of manufacturing there in 1951, and vice president, KVP-U.S. operations in 1955. He was named a vice president of KVP Sutherland at the time of the merger.

Mr. O'Donnell, was born in New York City and studied chemical engineering at City College of New York before joining St. Regis Paper Co. at Trenton, N. J., in 1941. He returned to St. Regis after World War II military service in the Navy, and came to Kalamazoo as manufacturing superintendent of the firm's Panelyte Division plant in Kalamazoo in 1946.

He joined the KVP Co. in 1953, and in 1956 was named manager of manufacturing for Appleford Paper Products, Ltd., Hamilton, Ont., and Montreal, Que. He was placed in charge of the Sutherland Division operations last year.

Spaulding Fibre Ups Plant Management Personnel

Promotions and new appointments to various production and plant management posts have been announced by the Spaulding Fibre Co., Tonawanda, N. Y.

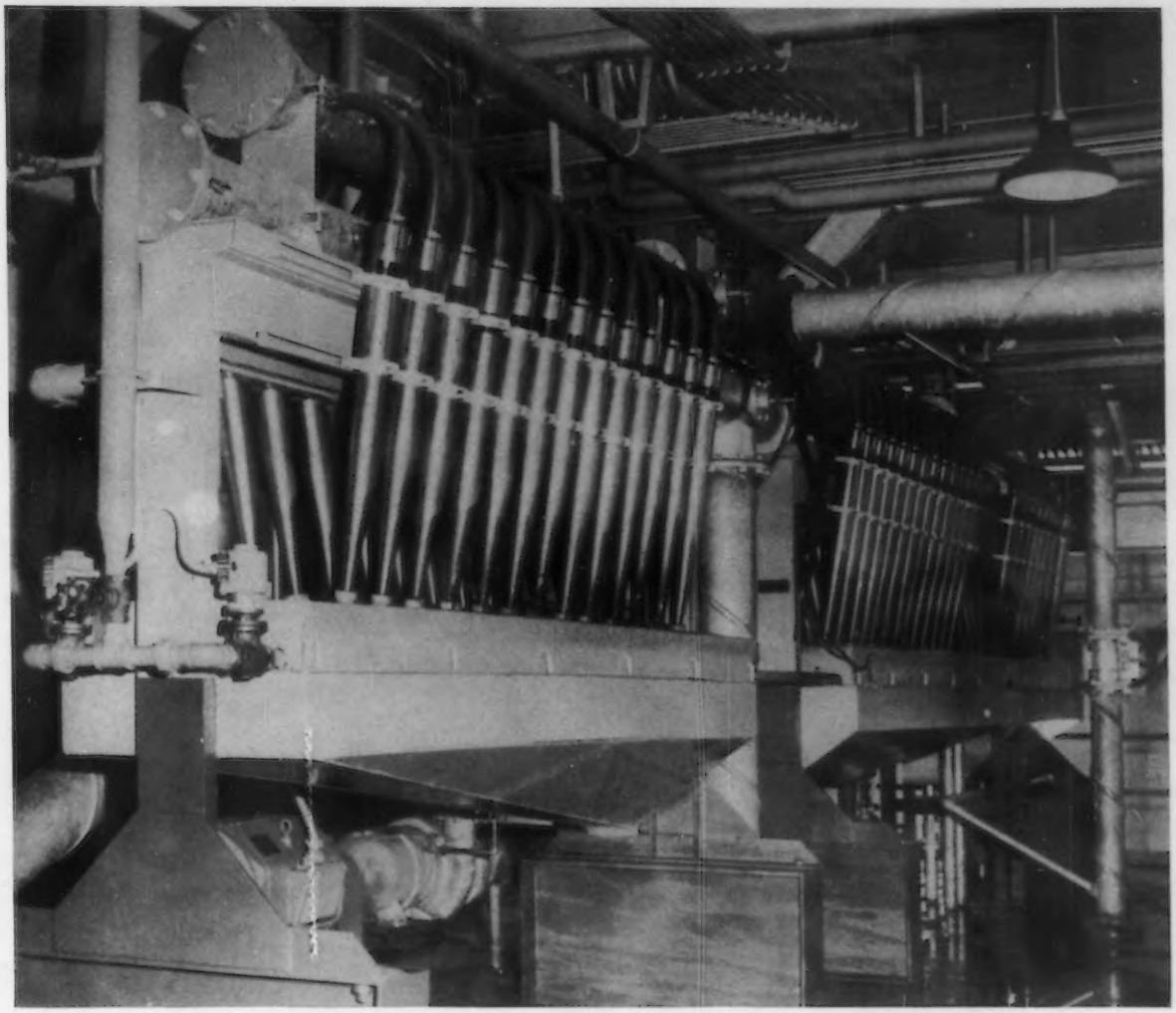
Named assistant plant manager is Martin A. Leuchtenberger, who has been Spaulding's paper mill manager since 1959.

An engineering graduate of Rensselaer Polytechnical Institute, Mr. Leuchtenberger was associated with the Civil Aeronautics Ass'n. in Alaska and the American Monorail Co. before joining Spaulding in 1955. At Spaulding he has helped develop and supervise the firm's paper mill facilities in various capacities.

Succeeding Mr. Leuchtenberger as paper mill manager will be John F. Nolan, a graduate of the University of Syracuse with a science degree in pulp and paper.

Mr. Nolan has been assistant general superintendent of the Hamilton Paper Co., Miquon, Pa. and has held managerial positions in other paper

W. J. Parson, left, and J. K. Dyer, whose appointments as production manager, newsprint, and production manager, pulp, Hiwassee Land Co., the woods organization of Bowaters Southern Paper Corp., were recently announced.



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producing firms. He joined Spaulding in November of last year.

Assisting Mr. Nolan will be Thomas R. Hall, who has been named technical assistant to the paper mill manager. His most recent post was that of by-products control engineer of the Ontario Paper Co. He has also worked for other Canadian paper firms. He is a graduate of the University of Toronto.

Hudson P&P Names Hill Research Engineer

Hudson Pulp and Paper Corp. has announced that Rodney L. Hill of Bridgeton, who holds a B.S. degree in chemical engineering from the University of Maine and who will receive his Master's degree in pulp and paper technology from the University in June 1961, has joined Hudson as a research engineer.

Mr. Hill will be coordinating the chemical project work at the company's laboratories in South Windham.

R. L. Hawkes

Keyes Fibre Names Assistant to President

Appointment of Richard L. Hawkes as assistant to Ralph H. Cutting, president of Keyes Fibre Co., Waterville, Me., has been announced by Mr. Cutting. Mr. Hawkes has been with Keyes in various executive capacities since 1946.

A native of Portland, Me., he graduated from Yale University with a B.S. in mechanical engineering, and served for three years in the Navy during World War II.

Coming to Keyes in 1946 as a design engineer, Mr. Hawkes was named manager of quality control in 1949. In 1952, he became industrial engineer for the company and was named manager of industrial engineering in 1958, the position he has held until the present time.

R. L. Betts

J. E. Chinn

Bowaters Carolina Names Mill Manager

Richard L. Betts has been named paper mill manager for Bowaters Carolina Corp., Catawba, S. C., and Jack E. Chinn assistant paper mill manager.

Mr. Betts joins Bowaters with over 20 years of pulp and paper industry experience. At Champion Paper and Fiber Co. for 23 years, he served as general paper mill superintendent and production manager for the Texas Division at Pasadena, Tex. He most recently held several positions in Champion's general offices in Hamilton, Ohio.

A native of Dexter, N. Y., he earned his B.S. degree in pulp and paper and did graduate work at New York State College of Forestry, a division of Syracuse University.

Mr. Chinn was formally employed as technical superintendent by Consolidated Water Power and Paper Co. at Wisconsin Rapids, Wis.

A native of Iowa, he earned his B.S. degree at Cornell, Mt. Vernon, Iowa, and attended the Institute of Paper Chemistry at Appleton, Wis.

Williams to Manage CCA Paper Mill Division

Lloyd E. Williams has been appointed raw materials manager of the paper mill division of Container Corp. of America.

Formerly a vice president of Pioneer Paper Stock Co., a subsidiary of Container Corp., Mr. Williams will now headquarter at the parent company's main office located in Chicago. In his new post he will be responsible for Pioneer's functions as related to Container Corp of America's plants.

Two Step Up At Crown-Zellerbach

Crown Zellerbach Corp. has announced two promotions in the Carthage, N. Y., Division.

Gerald F. Chamberlain has been promoted from shift supervisor to assistant paper mill superintendent. He has been with Crown Zellerbach since 1925.

William A. Dufner has been advanced to master mechanic from the engineering department. He joined Crown Zellerbach as a junior engineer July 1, 1954.

Thilmany Reorganizes Sales Division

Changes in the organization of the sales division of the Thilmany Pulp & Paper Co., Kaukauna, Wis., include establishment of a marketing group, reporting through the marketing vice president, J. T. Thomas. The change is designed to free sales specialists in the Kaukauna office from many of the interior sales responsibilities. The interior responsibilities are assumed by personnel assigned to the product department, who will continue to report through V. G. Haag, sales manager.

Managers of the newly created marketing sections are: R. B. Vogt, protective and packaging papers; A. J. Gerharz, decorated and cover papers; R. A. Knapp, converting papers; and N. A. Zanzig, advertising and art. The field offices also are assigned to the marketing group with L. R. Graef continuing as manager of the New York, Philadelphia and Boston offices, and A. R. Miller as manager of the Chicago and Kansas City offices. J. T. Thomas retains manager responsibilities for the Detroit and Cincinnati offices. D. G. MacDonald becomes technical sales service representative.

Modern Methods of Mechanical Pulp Manufacture

This book comprehensively covers all aspects of groundwood pulp production. The author, K. H. Klemm, has a broad knowledge of groundwood manufacturing methods and has been associated with groundwood mills on both sides of the Atlantic. Price: $5.00.

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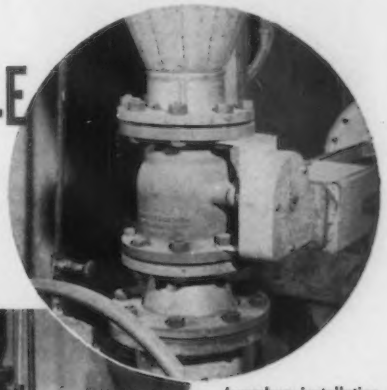
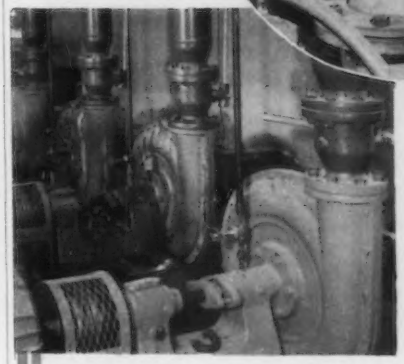


Jamesbury installation at Weyerhaeuser Longview Plant



Jamesbury installation at Mead Corporation Chillicothe Plant

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PJT NEWS OF CONVERTERS

J. L. Henderson

D. L. Frounfelter

Sonoco Opening Branch Plant in Ravenna

Sonoco Products Co. has announced the opening of a branch plant and sales office in Ravenna, Ohio.

Present plans call for the manufacturing of spiral tubes from one-inch to 36-inch diameter, a company spokesman said. Paper for this operation will be supplied from Sonoco's paper mill at Munroe Falls, Ohio.

J. L. Henderson was named branch plant manager. He will continue in his duties as plant manager of the Munroe Falls operation.

Appointed resident supervisor at Ravenna is Floyd Hunt, formerly resident supervisor at Sonoco's Longview, Tex., plant.

Named resident sales manager is D. L. Frounfelter, formerly a salesman with Sonoco.

The Ravenna plant will service Ohio, western Pennsylvania, western New York and West Virginia.

Sonoco manufactures practically anything made from paper in the form of a cone, tube or a combination of these shapes. It has branches in Massachusetts, Texas, Ohio, Indiana, Connecticut, New Jersey, Pennsylvania, Virginia, Georgia and California. Subsidiary companies are located in Ontario and Quebec, Canada, and in Mexico; associate companies are in Australia and England.

Nashua Corp. Announces Sales Appointments

Promotion of Austin W. Sanborn to the post of general manager, Coating Sales Division, and the appointment of Robert F. Wheeler as sales manager, Merchant Sales Division, have been announced by Nashua Corp., Nashua, N. H.

Mr. Sanborn will assume overall responsibility for merchandising and sales policies and successful operation of the Nashua Coating Sales Division.

Mr. Wheeler has been associated with the Merchant Sales Division for several years. He is a former sales representative in the Philadelphia area and has held the post of manager, merchant sales, since 1956.

Lily-Tulip Consolidates Eastern Sales Regions

The Lily-Tulip Cup Corp. has announced the unification of two of its Eastern sales regions into one integrated unit.

The regions affected by the consolidation are the Metro Sales Region, which covered metropolitan New York and northern New Jersey, and the Atlantic Region, which covered the New England states, Mid-Atlantic states (except metropolitan New York), plus Virginia, West Virginia and the District of Columbia.

The newly organized region will be called the Eastern Region. It will be managed by M. Schechter, formerly manager, Metro Region.

R. C. Snyder, formerly manager of the Atlantic Region, has been appointed to the newly established key headquarters position of field sales administrative manager in the New York headquarters. In this capacity, Mr. Snyder will be responsible for coordinating the sales activities between the sales forces responsible for general products, packaging and vending items.

Phelan Retires From Container Corp. Post

Balfour Phelan, vice president, Container Corp. of America, retired December 31 after nearly 25 years of service with the company.

A graduate of Yale University, Mr. Phelan joined Container Corp. in 1936 at its Lake Shore plant, Chicago. He was transferred subsequently to the company's 35th Street folding carton plant, Chicago, where he served successively as assistant sales manager, sales manager, and general sales manager. He was elected vice president in 1954 and made responsible for boxboard and carton operations of the company's central division.

N. F. Krueger

Consolidated Names Sales Manager, Folding Cartons

Appointment of Norman F. Krueger as sales manager for folding cartons for the Consolidated Paper Co. has been announced.

Mr. Krueger will be responsible for all folding carton sales and marketing activities of the firm. Since 1960 he has been branch manager of the Bremen, Ind., division of the company.

Mr. Krueger joined Consolidated in 1940 and was transferred to sales in 1951. In 1958, he was named regional sales manager, Monroe.

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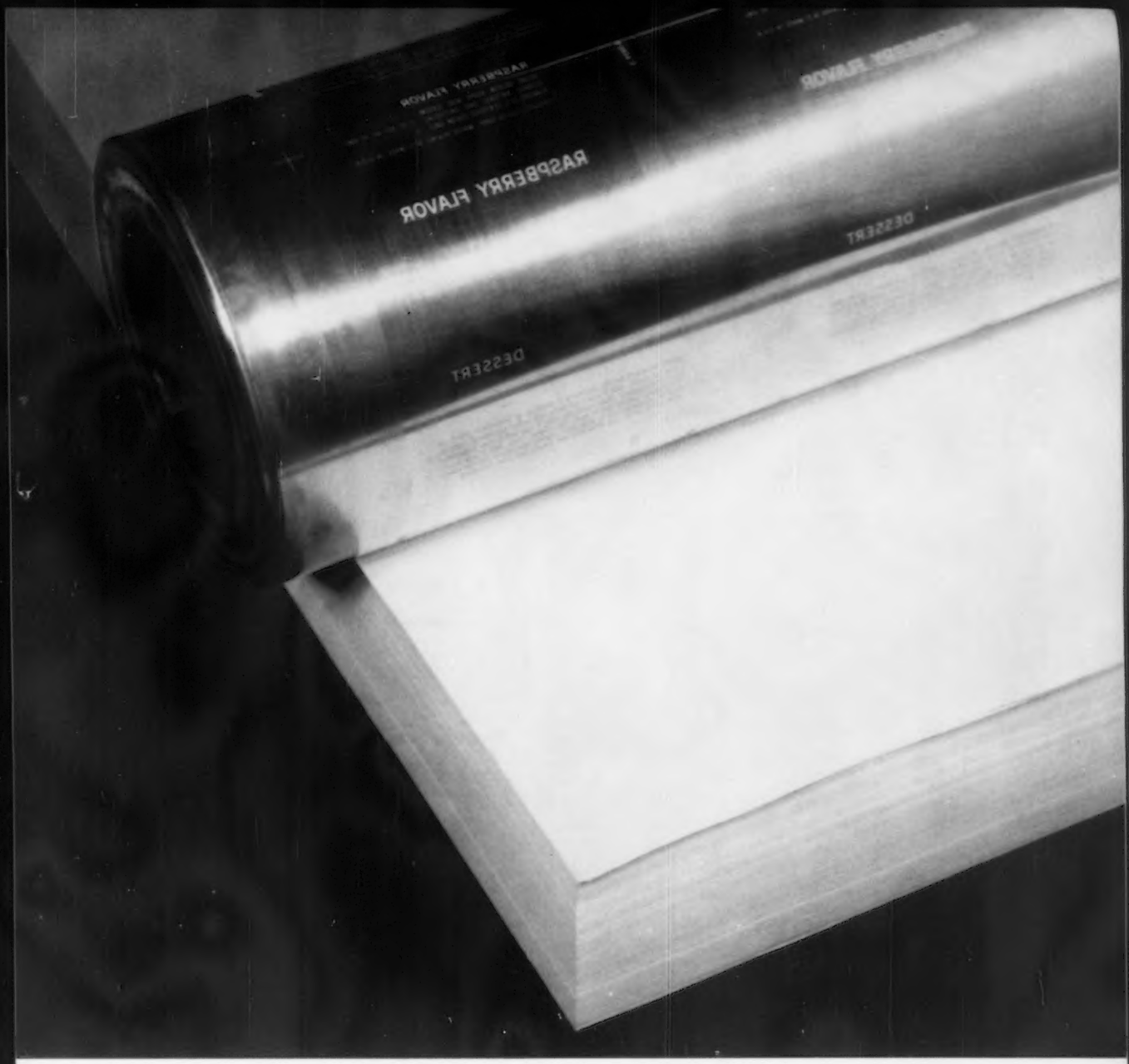

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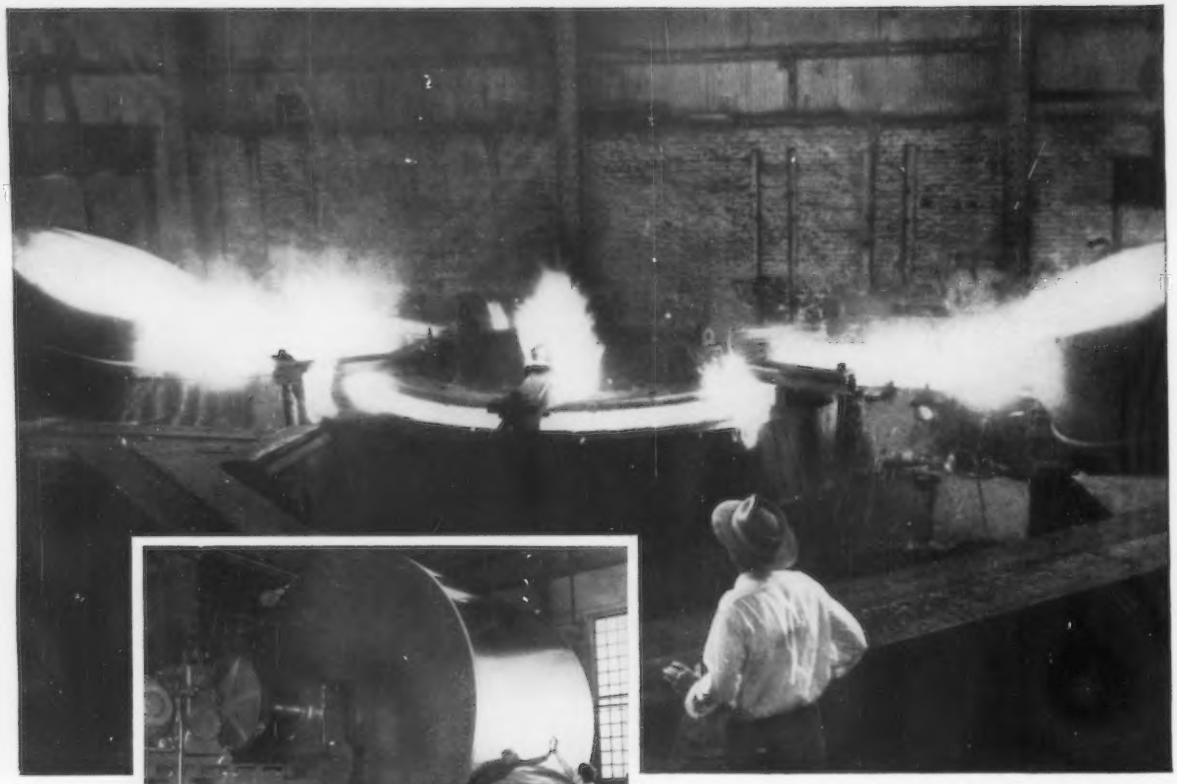

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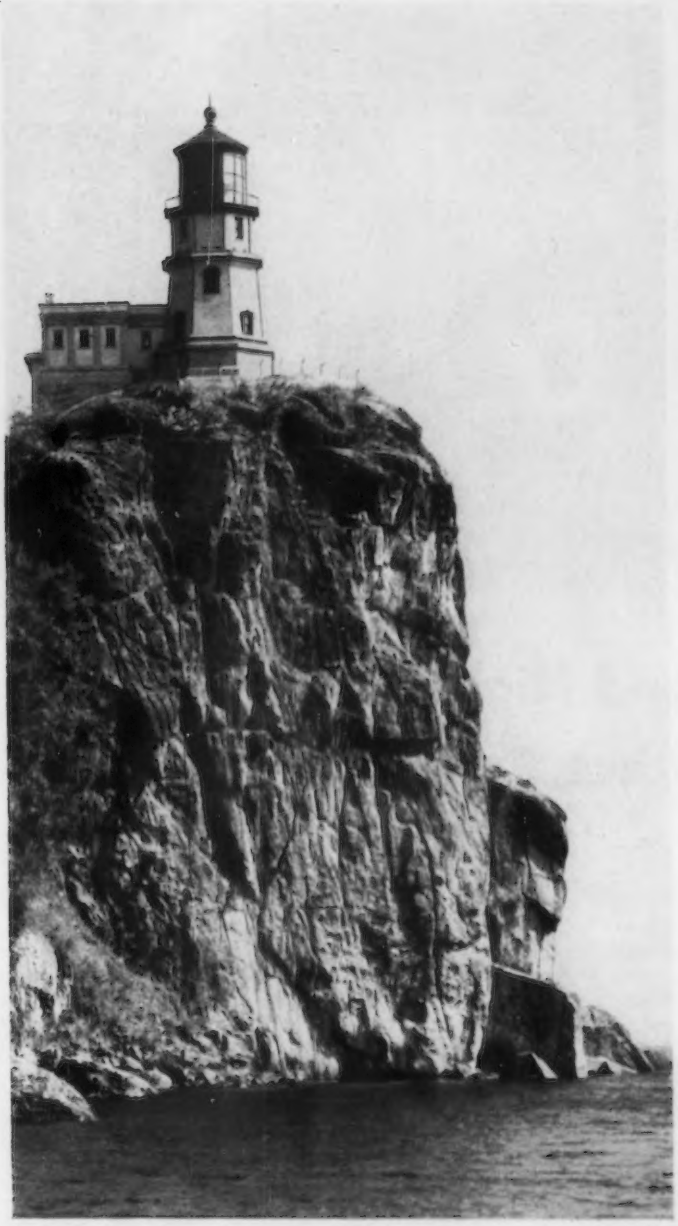
*Idea submitted by William A. Steadwell, St. Regis Paper Co., Jacksonville, Florida

Photo by: Louis C. Williams, Nashville, Tenn.



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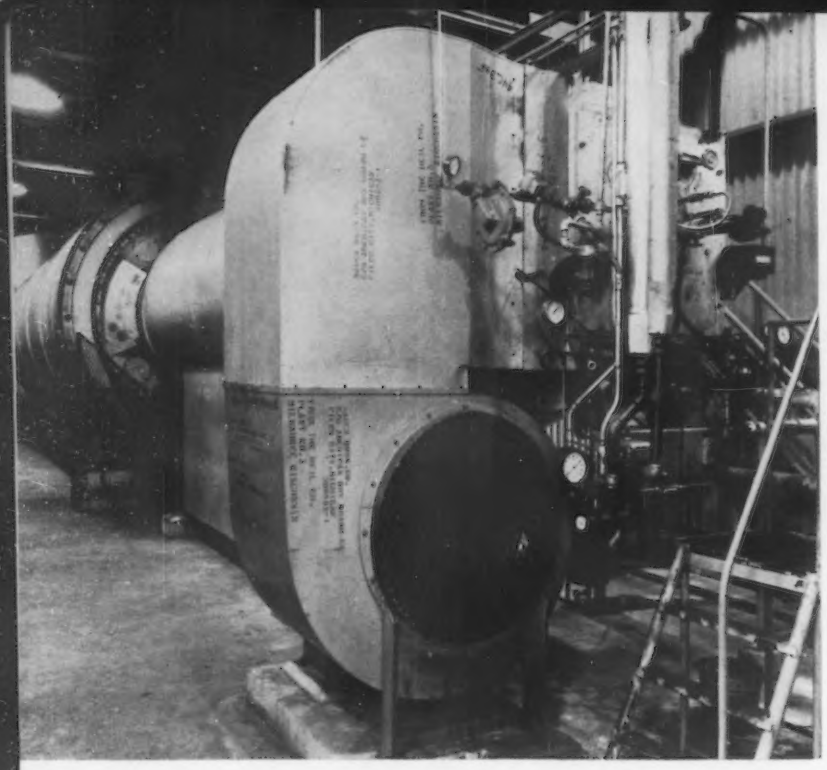


This oil-fired rotary dryer comprises an integral part of a revolutionary system for drying and baling cold soda and kraft pulps. Here is the first published description of . . .

How Fluff-Drying and High-Density Baling of Market Pulp Works for PCA

Harry Dyer,
Assistant Editor,
Paper Trade Journal

Concurrent with the inauguration of its cold soda pulping facilities at Filer City, Mich., the American Box Board Division of Packaging Corp. of America installed a novel system for the flash drying of fluff pulp. "Novel" in the aspect in that it completely departs from the conventional method of forming and drying a continuous sheet. This is the third such installation in the United States and the sixth on the North American continent. The other installations in this country are at the West Virginia Pulp & Paper Co. in Luke, Md., and at Waldorf Paper Products Co., Missoula, Mont. All three operate on kraft pulp, while the three remaining ones, in Canada, dry and bale groundwood pulp.

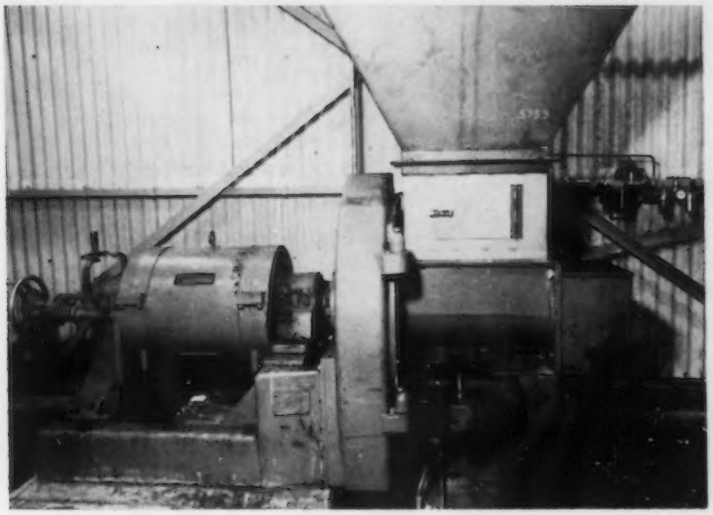
However, PCA has progressed a little further from the conventional by successfully drying and baling cold soda pulp in their system. This is the first instance we know of where this type of pulp is produced for the market.

Essentially the fluff drying system consists of the following steps: (1) dewatering in a high-pressure screw press, (2) fluffing of the pulp, (3) flash drying, and (4) baling in a continuous high-density press. The process was originated by Bauer Bros. Co., and is referred to as the Bauer Bale System.

Jack Ham supervises the flash drying and baling installation.

No. 3 fourdrinier at Filer City has a design capacity of 150 daily tons of coated food board. Prior to the inception of the cold soda pulping facilities, No. 3 was supplied entirely with pulp from the kraft mill. Today, No. 3's furnish utilizes a blend of kraft and cold soda pulps as well. The resulting kraft overage (35 tons) is thus dried and baled in the new Bauer 100-ton capacity system and sold as a market pulp. An average of 35 tons per day of cold soda pulp is also processed in the new system.

Kraft pulp bleached by chlorine dioxide to a G. E. of 90, or cold soda pulp bleached with peroxide to a G. E. of 61-62, is diverted from its respective pulp mill and stored in the 9,000 gal. capacity pre-press chest at three and a half to four per cent consistency. It is then pumped to the dewatering press' stuff box. Overflow from this headbox is returned to the pre-press chest. Pulp flows by gravity under a constant head into the press.



Dewatered pulp is fluffed by this single disk mill located directly beneath the vertical press.

Top of the Zenith vertical press, showing stock inlet line and spindle's driving motor.

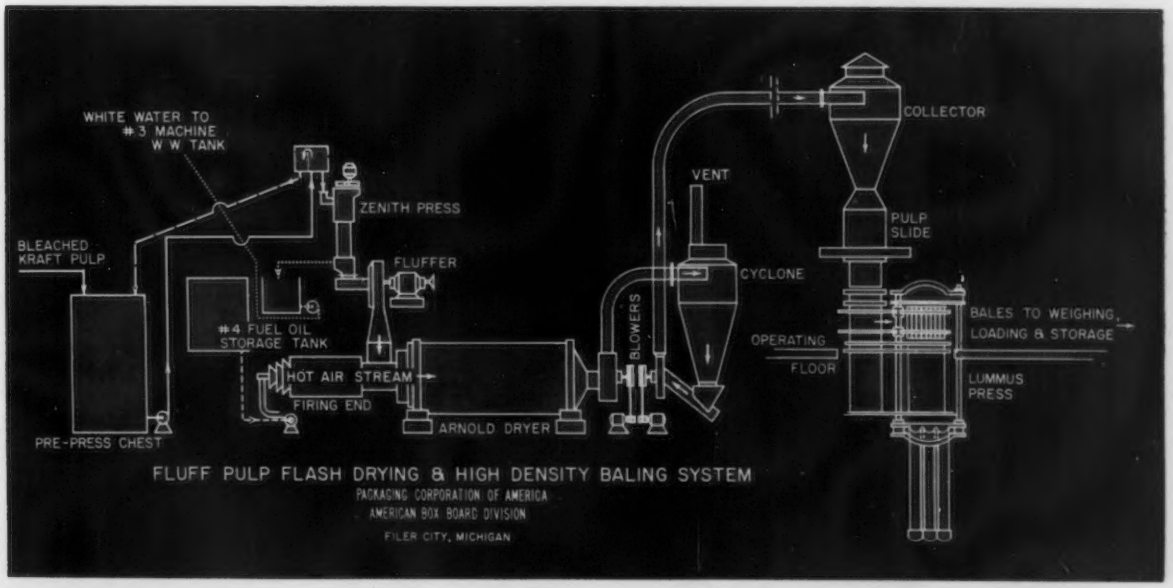
Vertical Press

The Zenith continuous press is of the vertical screw type. Its application is to remove mechanically the bulk of the water from the pulp before it is finally dehydrated in the rotary dryer. This step in the system is necessary in order to make the overall operation economically feasible. The overall height of the press is nearly 15 feet and its outer casing measures approximately five by five feet.

The Zenith itself is essentially a heavy tapered screw with interrupted helical flights turning inside a cylindrical outer stainless steel screen containing ⅛-inch diameter perforations. Through this screen blade resistors project into the pulp area, thus retarding the pulp's circular movement and forcing the pulp to respond to the helical flight action. The tapered screw, whose spindle surface also comprises a drainage area, is slowly rotated at 8 r.p.m. by a 40 h.p. electric motor.

Due to the helical flight action and the tapered screw, the pulp moves into a constantly decreasing volume, with the water being eliminated through both the outer shell and inner spindle screens. When the pulp leaves the last flight at the bottom of the spindle, still under pressure, it is forced through a second restricted tapered opening which is variable as to port size. This second pressure zone has upper and lower drainage screens which permit the escape of the remaining removable water before the pulp is ejected into a screw conveyor. The second pressure zone also prevents the re-adsorption of already removed water. Its port size, and thus the final solids content of the emerging pulp, is controlled by the action of a pneumatically-actuated cone.

Total drainage area provided by the screens is over 55 square feet. The pressure developed by the screw and the cone dewater the pulp to approximately 40 per cent solids. White water expressed from the press is discharged through a 12-inch



diameter pipe and pumped to No. 3 paper machine's white water tank.

From the press the pulp is conveyed by a 14-inch diameter screw conveyor into a Bauer Model 245 single disk mill with 36-inch plates. The disk, powered by a 100 h.p. motor, revolves at 1200 r.p.m. Here, the nodules of pulp developed in the press are opened and fluffed. The fluffed pulp is centrifugally discharged from the disk mill into a vertical chute which guides the pulp down into the heated air stream of the dryer.

The fluffer is the identical model disk mill that PCA employs in the cold soda mill as a chip shredder. When plates in the fluffer have to be replaced, PCA has devised an interesting plate-saving strategem. Instead of installing new plates, the partially worn ones in the chip fractionator are transferred to the fluffer and the rotation is reversed. Worn plates removed from the fluffer are discarded.

Multiple-Pass Dryer

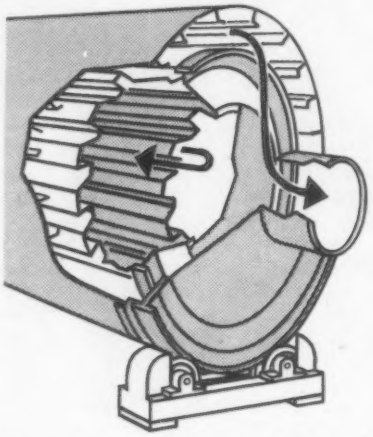
The three-pass dryer is a horizontal revolving drum, 10 ft. in diameter and 30 ft. long. Figure 2 shows a cutaway of the drum's interior exposing three concentric tubes. A 15,000 c.f.m. blower located at the drum's outlet end draws a stream of heated air from the furnace which is located at the opposite end of the dryer. This stream picks up the fluffed pulp dropping into the dryer and carries it down the interior channel, back up the middle tube, and down the outer tube. It is noted that each tube's shell is fluted in the longitudinal direction. This is intended to assure streamlined flow and to prevent swirling or whirlpooling of the pulp as it passes through each channel. Exposure time in the dryer totals about one minute, but this time may range between a few seconds to two or three minutes depending on each particle's size and weight. Small particles (which dry faster) are drawn through the dryer faster than large (slower drying) particles. This action is reported to prevent the occurrance of surface hardening, which would hinder repulping.

The velocity and heat of the air stream are different in each of the three tubes to suit the changing rates of evaporation as the moisture content of the pulp is progressively reduced. The outer shell of the drum is insulated to minimize heat lost.

The furnace end of the dryer is an insulated direct-fired unit using No. 4 fuel oil. High pressure steam (368° F. and 155 p.s.i.) atomizes the fuel oil as it is injected into the furnace. Air, mixed with the fuel at the moment of injection, is heated to 800° F. by the combustion. Temperature of the heated air at the discharge end of the dryer is 250° F. Wheelco automatic controls located at the discharge end and on the furnace maintain a constant temperature within a 2° F. range. This device reacts instantly to any temperature change and immediately adjusts the flow of fuel to the furnace.

Pulp, at the point of discharge from the dryer, contains about ten per cent moisture. The amount of fuel oil consumed is 35 gallons per ton of dried pulp.

The blower at the discharge end, driven by a 60 h.p. motor, blows the dried pulp into a primary cyclone where hot, moist air is separated from the pulp. This immediately halts any further drying action on the pulp and prevents surface hardening of the fibers or any strength loss due to the drying action. This air is vented to the atmosphere. A similar blower driven by a 15 h.p. motor located after this cyclone conveys the pulp to a secondary cyclone which collects the pulp and feeds it into a baling press.



Cutaway of dryer drum at blower end. Flutes on channel walls streamline flow of fluff. Arrows indicate direction of flow through the three channels.

The secondary cyclone is not located in the main dryer building but is situated in the paper machine's roll finishing area about 150 feet away.

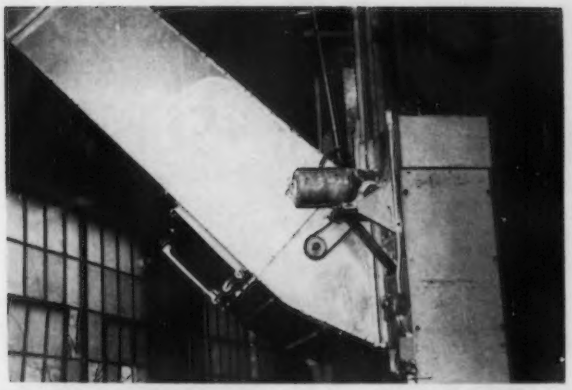
High Density Bales

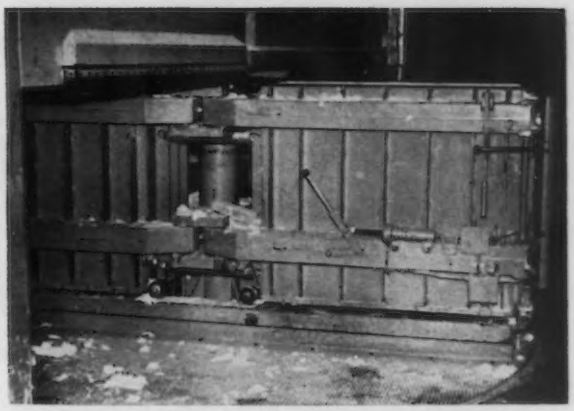
Operation of the two-station bale press is semi-automatic and continuous; that is, while one bale is being formed and tamped, the other is being compressed. Pulp slides from the collecting (secondary) cyclone into a box-like chute and backs up against a gate. The gate is raised by the tamper on its upstroke and pulp is "kicked" into the bale box. The "kicker" is essentially a paddle centrally-mounted on a horizontal axis which is rotated by an electric motor through a chain drive. The motor is actuated by a limit switch when the tamping ram is at the top of its stroke, and the kicker cycle is controlled by a time delay relay. As the cycle ends, the ram begins its descent, closing the gate, and the pulp is tamped once. The tamper ram is actuated by solenoid switches at the top and bottom of its stroke. Normally, about five minutes are required to accumulate sufficient pulp in the baling box. The resistance of the pulp in the baling box to tamping is transmitted through the hydraulic system to a pressure switch. This switch, when tripped, stops the tamper and rings a bell, indicating that it is time to index the baler. A lever is pushed, unlocking and rotating the boxes 180°. The full box is positioned over the compression station of the baler, while the empty box stops under the filling station. The filling cycle begins anew.

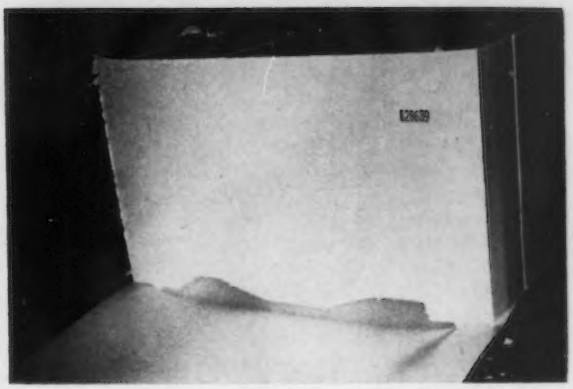
In the compression station, multiple hydraulic rams concertedly move a platen up to compress the bale to the desired density. A pressure switch automatically cuts off the action as this point is reached. No. 1 press operator throws a valve, and the rams retract. He then swings open one side of the baling box and stamps the order number on the bale. No. 2 man moves in with a fork lift truck, extracts the bale, and sets it on a sheet of heavy wrapper. When four of these bales are gathered, the package is wrapped and strapped, weighed and loaded onto railroad box cars. Normally, two bale densities may be formed in the press, one under a plated pressure of 1,650 p.s.i., the other under 850 p.s.i. These densities are dictated by customer requirements. The finished bales measure 20½ by 51½ by 35 inches. The high density bale weighs approximately 750 lbs. for a density of 35 lbs. per cu. ft.; the low density bale weighs 600 lbs. for a density of 28 lbs. per cu. ft.

An interesting facet to the compression stage is that the platen has two bars welded to the upper surface at a distance apart from each other equal to the distance between the tines of the fork lift. Thus, when a bale is compressed, two slots are formed on the underside. Fork lifts then can easily handle each bale. Bundles of four bales consequently do not require wrapping on pallets, thus saving on storage space.

It is not wholly necessary to wrap







Baling Operation Views: Chute to tamping box, showing gate's drive. Vertical casing contains tamper (top, lt.). Filled box being rotated to compression station (under nameplate) (top, rt.). Compressed bale in box, door open, rams still extended (bottom, lt.) Note pre-formed fork lift slots in finished bale (bottom rt.).

or even strap bales, notes PCA. The bales will hold together by themselves, although some erosion will occur if a corner or edge is knocked. However, to provide protection against contamination, especially in the bleached kraft pulp, the bales are wrapped prior to shipment.

The hydraulic oil reservoir is located in the basement underneath the press. The pumps and motors are automatically started by solenoid switches as each cycle requires.

Equipment Suppliers

It is noteworthy that the principal equipment comprising the Bauer Bale System has been borrowed from other industries. The Zenith press, supplied by E. D. Jones, had been originally developed for the food processing industry. The Arnold Dryer Division of the Heil Manufacturing Co., manufactured the rotary dryer for the agricultural fiber drying concerns. Lummus Cotton Gin Co. manufactured the baling press, and as the name implies, this piece of equipment was borrowed from the cotton industry. Bauer Bros. is licensed by the respective manufacturers to supply the dryer and baler.

Comments

Packaging Corp. has a more efficient and economical system of drying pulp when this method is compared to conventional pulp dryers. Initial cost is obviously much lower, in the neighborhood of $375,000. Labor required is three men per shift; one for dewatering and drying, two for bale handling and shipping.

Dryer building. Tower contains Zenith press. Baling press is installed in paper mill 150 feet off rear of this building.

PCA reports that brightness loss is negligible (1 to 1½ points) as the pulp passes through the system. Losses in strength, which occur to pulp whenever it is dried, are less than in conventional methods. Tear, for instance, experiences a 4½ to 5 per cent degradation during drying. There is reportedly no difficulty encountered in repulping; either kraft or cold soda pulp can be disintegrated in a matter of five minutes. Refining, likewise, does not suffer under any handicap from the baling. There are several other advantages to this system. One is the savings in freight because of the high density bales. Less biological deterioration occurs to the pulp due to the high degree of dryness. The equipment's comparatively lighter weight, plus its lesser floor space requirements reduces the demand for large housing and heavy foundations. PCA's dryer building constructed of Transite sheathing over a structural steel frame, measures 30 by 75 feet (2,250 sq. ft.) with about 25 feet headroom. This height is with the exception of a 50 foot tower accommodating the Zenith press and disk mill.

Five Criteria For Keeping Centrifugal Pumps in Service

Why do these usually dependable machines sometimes fail? The answer, write the authors, lies in comparing the pump's actual operation to its design criteria. Each of these is discussed in detail.

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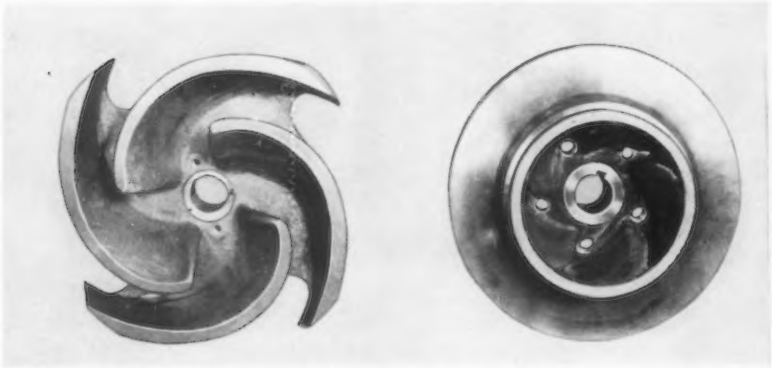

FIGURE 1: SINGLE-SUCTION ENCLOSED AND OPEN IMPELLERS

The pump manufacturer is aware of the confidence placed in his product. Thus, he designs and builds dependable centrifugal pumps for stock, filtrate, white water, black liquor, fresh water and the myriad other services found in the mill. Why then do these vital machines sometimes fail? The answer may be found by comparing actual operation with the criteria necessary for a pump to function best. These criteria include: correct choice of type of pump; accurate sizing or fit in regard to rating; correct selection of materials of construction considering corrosion and erosion factors; adequate installation including foundation, piping and alignment details; finally proper maintenance of bearings, stuffing boxes, and sleeves.

The basic function of a centrifugal pump is to move a liquid from one step in a process to another. Not all liquids are alike. Liquid properties such as temperature, solids, specific gravity, pH, viscosity and fluidity vary. This requires that the type of pump be correctly selected not for *a liquid* but for *the liquid* which it must pump. Each selection must be based on the proper design of impellers, casings (casing split, nozzle position, accessibility for maintenance), bearings, lubrication and bedplate style to economically handle the specific liquid. For example, digester circulators require end-suction pumps with open impellers for handling cooking liquor with solids, heavy casings for the high pressures involved, accessibility to the rotating element without disturbing pipe connections, end-suction and top discharge to eliminate unnecessary elbows in the piping, water-cooled bearings and sometimes spring-loaded baseplates to take up strains due to wide temperature fluctuations. Blow pit pumps require impellers designed for handling thick stock not subject to the high temperatures found in digesters nor frequent variations in temperature. Filtrate pumps handle larger volumes of dilute liquor, usually at temperatures somewhat below those encountered at the blow pit and are frequently double suction. Heavy black liquor in the recovery system requires heavy duty end suction pumps for a liquid which increases in concentration of solids, viscosity and temperature as it proceeds towards the furnace. Stock pumps in the paper mill must have impellers capable of handling a semi-liquid at ambient temperature. Fan pumps are higher capacity units normally double suction type for better efficiency, reliability, and best impeller inlet design. Lime, clay and starch require small open impeller pumps with simple wear adjustment.

FIGURE 2: THREE TYPES OF OPEN IMPELLERS

Each section of the mill then has its own pump type requirements which must be considered and satisfied. Care must be exercised in the initial choice—and always when moving existing pumps from one service to another.

The various types of impellers are illustrated in Figures 1, 2, and 3. The single-suction enclosed impeller (Figure 1) is best for clear liquids. When wear occurs on the hub and casing wearing rings, clearances can be restored by replacing parts. Note the balance ports in web. The open impeller is best for slurries and liquids containing abrasives. The leakage joint between impeller vanes and sideplate can be adjusted for wear without replacing parts. "Pump out" vanes on the back of impeller provide hydraulic balance and reduce stuffing box pressure to a mipimum. The number of vanes, their curvature and the design of the "eye" all are factors influenced by the flow characteristics of the liquid to be pumped, with size of solids to be handled and the consistency of the liquid.

Liquid enters single-suction impellers from only one side and these are normally attached to the end of the shaft. The wearing ring on the back is for hydraulic balance. The liquid enters the double suction impeller equally from both sides. This also allows the impeller to be located in the center of the shaft between bearings for increasing mechanical strength, and allows disassembly without disconnecting the piping or moving the pump's motor.

Sizing the Pump

A pump fits the job if the rated head and capacity fall within an acceptable range of efficiency for the size casing and impeller. Ideally operation should be at the best efficiency point. Each type pump is available in various sizes. Speed and impeller diameter choices increase

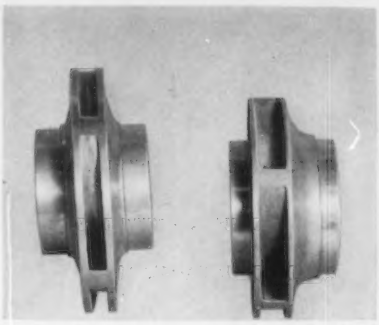

FIGURE 3: DOUBLE AND SINGLE SUCTION IMPELLERS.

the number of best efficiency points available. Even though the number of rating points is great, careful selection permits operation at or near best efficiency. This assumes that the rating used to select the pump is accurately figured and actually reflects the job requirements. If safety factors are used too freely or the rating point is based on future conditions much greater than existing ones, an oversized pump is selected and installed.

Oversizing results in unnecessary power cost, excessive throttling and sometimes annoying vibration, noise and even mechanical failure. Power cost per unit of fluid increases as efficiency decreases. For example 1000 g.p.m. at 100 feet total head pumped at 70 per cent efficiency requires 36.1 b.h.p. at 1.0 specific gravity. This pump may have been rated at 1250 g.p.m., 125 feet 80 per cent efficient per specifications (a modest 25 per cent safety factor). If those specifications had read 1000 g.p.m., 100 feet, a smaller pump 80 per cent efficient requiring 31.6 h.p. would be installed. The saving of 4.5 h.p. at 2¢ per kilowatt hour would amount to $692.00 per year.

The larger pump above is being throttled to make it operate at 1000 g.p.m. Partially closing a valve in the discharge piping causes turbulence which in turn may cause noise and vibration at the valve. On high consistency stocks it may also plug some valves. There is turbulence created in the pump too. At the best efficiency point the flow is smooth through the pump passages. On either side of this point some turbulence occurs. The farther the operation is away from this point the greater the turbulence. Internal recirculation and hydraulic unbalance increase. The result may be rapid and excessive wear at the vane tips (see Figure 4) and in other high velocity areas within the pump.

Corrosion or Erosion?

A pump contains correct materials of construction when corrosion and erosion are checked economically. Bronze-fitted or all-iron construction is used when the liquid is neutral or nearly so. As more chemicals are added to the system making it more acid all-bronze becomes useful. Even more acid requires stainless steels or higher alloys. In dilute alkaline or caustic systems iron is suitable. As concentration and temperature increase, type 2 Ni-resist or stainless may be required for critical parts such as sleeves and impeller. Under worse conditions all wetted parts must be either Ni-resist or stainless steel.

The success of any material for a given service is dependent on the degree of corrosiveness and the conditions of operation. Neighboring mills using nearly but not quite identical pulping methods may require entirely different metallurgy in their attempt to combat corrosion. Experience is the best guide in choosing materials.

To measure the usefulness of a material it is important to be able to tell the difference between corrosion and erosion. Pulp and paper mill pumps are being called on to handle

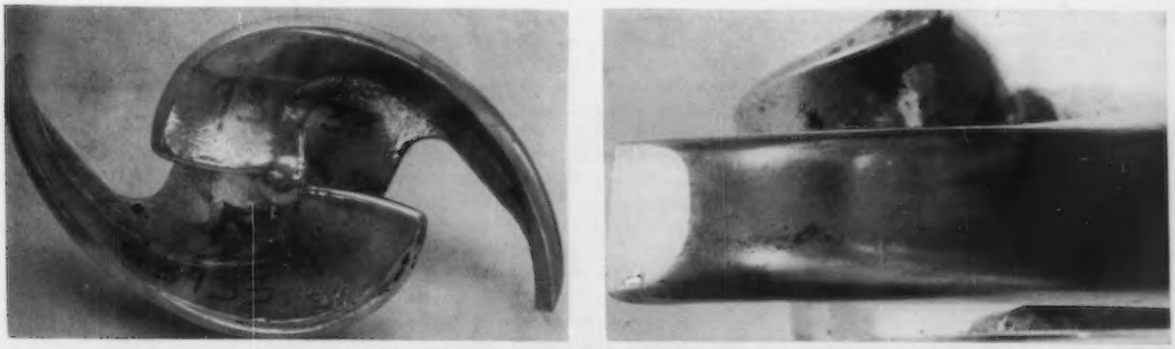

FIGURE 4: STAINLESS STEEL IMPELLER ERODED BY ABRASIVE SOLIDS.

FIGURE 5: CORRODED NICKEL-CHROME PUMP COVER DUE TO HYPOCHLORITE BLEACH

FIGURE 6: ERODED AND CORRODED CAST-IRON SUCTION COVER

materials more highly corrosive and abrasive than those handled in the past. Inevitably, these service demands result in internal pump damage which may be due to corrosion, erosion, or both. Corrective measures depend on proper identification of the causes of the damage, and frequently damage is misinterpreted through failure to analyze all of the factors.

To make a correct diagnosis, it is necessary to consider the velocity distribution within a pump. Normally, the lowest velocity would be at the suction inlet, which would be the same as the velocity in the suction pipe, if pipe and suction nozzle are the same size. The liquid is accelerated into the eye of the impeller and is discharged from the vane tips at a much higher velocity. In the casing (or volute) of the pump, velocity is converted back into pressure, as the liquid is gradually decelerated from the cutwater to the discharge connection.

In addition, localized turbulence and high velocity will occur at the leakage joint (through the wearing ring), at the cutwater in the casing and at the casing drain and vent connections. Thus, consideration of velocity distribution would indicate that, in certain internal pump areas, damage would be more severe than in others. For example, if we were to pump lime slurry or clay in an all iron- or bronze-fitted pump, we would expect a small amount of metal removal in the suction piece, an increased amount throughout the impeller and the casing and a gradually decreasing amount of metal removal in the discharge nozzle. The vane tips of the impeller, the leakage joint and the cutwater would definitely suffer the most severe attack.

Corrective measures depend not only on the correct identification of the type of damage but also on the determination of the reason for the damage. Corrosive attack can be independent of velocity; that is, if the metal is not sufficiently corrosion-resistant, the attack may be quite uniform over all wetted surfaces. Therefore, low-velocity sections should be checked carefully to make certain there has been no corrosive attack of any type on the metal in this area.

The series of photographs reproduced in Figures 4, 5, and 6 may be used as a guide to simplify correct identification of frequently misinterpreted causes of internal pump damage. In no case illustrated was there any indication that the metals were defective. The impeller in Figure 3 is from a pump handling a 20 per cent fiber slurry containing sand, and is made of 316 stainless steel. High polish on the impeller's entire surface results from the abrasive solids handled. Damage is the result of erosion, with no indication of corrosion. Excessive rounding of vane tips is due to excess impeller diameter. This part shows excellent abrasion resistance of austenitic metals, such as 316 stainless, which in many cases of pure abrasion increase in resistance due to work hardening.

The pump cover of high nickel chrome in Figure 5 was taken from a pump handling hypochlorite bleach. Damage is typical of the pitting type attack associated with austenitic stainless steel in contact with halogen ions. Pitting resulted from free chlorine, with pits quite uniformly spread. There is no evidence of difference in attack due to differences in velocity. In a number of installations, glass-lined pumps have been used successfully for this service.

The cast-iron suction cover in Figure 6 is from a tertiary centrifugal cleaner handling stock at a 3.5 pH. Damage is greatest at high velocity areas and is caused by erosion. The gouges in the center (made by a knife) indicate the cast iron was not sufficiently corrosive-resistant. This is a striking example of graphitization where the iron is selectively removed by the corrosive liquid, leaving a soft surface of carbon and corrosive product. This surface is susceptible to erosion in areas of high velocity or impingement, yet it possesses a high degree of corrosion resistance. New high-velocity parts will corrode when placed in contact with the old graphitized parts. The solution is to up-grade the replacement parts with a material of higher corrosion resistance.

Correct Installation

A pump is adequately installed when sound structural practices are attended to and hydraulic and mechanical details prescribed by the manufacturer are followed. The pump bedplate must be on a substantial concrete foundation, properly grouted as shown in Figure 9. Every precaution should be taken to insure that the unit is level and free from external strain so as not to put strains in the casing or in bearing housings. Short straight suction lines are best. Every elbow, valve, tee, strainer, or other fitting or extra foot of suction piping reduces the chances for the fluid to enter the pump suction smoothly, free of

slugs of stock, turbulence and entrained air.

Alignment of pump and driver is extremely important. If the driver comes with the pump, alignment was done on the assembly floor of the pump manufacturer. However, during transit and installation it is possible to warp bedplates slightly or shift driver or pump on the bedplate. Alignment can usually be accomplished by wedging the bedplate before grouting but must be rechecked before start up. Consult the step by step installation check list supplied by most manufacturers and attached to the pump at the factory. And *before*—not after—the coupling halves are joined is the best time to jog the motor to check rotation.

A pump is properly maintained when it gives long trouble free service. Absent are frequent stuffing box repacking, sleeve replacement, bearing changes, rotating element repairs. With a pump sized accurately, built of the correct materials and adequately installed, maintenance problems disappear. Or do they? What about the box of worn sleeves in the shop, the large supply of bearings on the shelf, the puddles of water under the digesters and that grease slick on the floor just south of the superintendent's office?

The stuffing boxes of most properly designed pumps in a mill are subject to pressure equal to or slightly above suction presure. In many cases this is pressure due only to liquid level held in a chest, perhaps 15 to 20 feet or about 6½ to 9 pounds. Most end-suction pump boxes are under slightly more pressure than double-suction. The packing is there to keep the liquid in the pump. Only on vacuum or suction lift with a pump above the source of supply does the packing serve to keep air from leaking into the pump. Packing must be kept wet to lubricate, cool and seal. Forty to 60 drops per minute of leakage out of the gland is necessary. With normal low pressure acting against the inside of the packing this leakage can be controlled with the gland nuts finger tight. However, if the packing is shredded or hardened or if the sleeve is scored or too much pressure is put into the water seal ring the box tends to leak more. To cure this the gland is tightened with a big wrench which squeezes and hardens the packing which scores the sleeve which causes more leakage and around it goes again.

Seal Water

Seal water, used when there is a positive suction pressure, is to keep

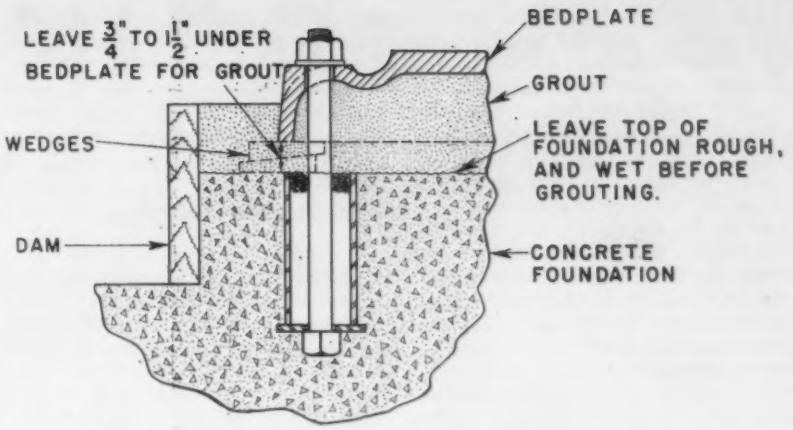

FIGURE 7: HOW TO PROPERLY GROUT A PUMP'S BEDPLATE

fibers and solids from getting under the packing and thereupon dewatering and hardening. If there are no fibers or other abrasives seal water is not necessary. Pressure into the seal ring should be limited to just a few pounds above suction pressure (a little more on end-suction pumps), just enough flow to flush from the seal ring back into the pump is required. The less seal water pressure used the less work the rings of packing have to do and the longer they will last. The sleeve the packing rubs on must be smooth and free from run-out. No matter how good the packing is it won't last if the sleeve it seals against is scored or burred. Square cross-section, die-formed packing allows a superior packing job because it fits the sleeve and stuffing box closely, seats easily and permits each ring to do some of the work. Each ring must be seated in the box before the next one is added. To do this a tool should be used that will allow the packing to be tamped firmly down against the end of the box or the stuffing box bushing. If the packing is simply pushed inside the opening one ring at a time using the gland, only the last ring or two will feel any pressure when the gland is finally drawn up. With only these last rings doing any sealing, leakage is too great and more gland pressure has to be applied. A scored sleeve will have the deepest grooves next to the gland showing that most of the pressure was concentrated here. With the box freshly repacked, the seal water pressure corrected and the pump running, adjust for the necessary leakage by tightening the gland nuts. Avoid uneven tightening which could cock the gland so that it could cut into the sleeve.

Pump bearings may be oil or grease lubricated. Grease is preferred where contamination is a problem. It completely seals the bearing housing to the exclusion of moisture and dust-laden air. Regreasing is required only three or four times a year—about every 2,000 hours of operation. Oil used in the same area should be changed every few weeks to prevent build up of bearing-destroying moisture and chemicals. If resilient bearing housing seals are used with either type of lubricant, care must be taken to install them properly. Oil seals are designed to keep oil in the housing but can be used on grease to keep water and dirt out of the housing. The seals are constructed alike but should be installed differently.

Bearing temperatures are often estimated by hand. If the housing feels cool or warm no trouble is expected. However, if it feels hot there is something wrong. Or is there? Grease lubricated ball and roller bearings can be operated safely at temperatures to 180°F. The upper temperature limit is determined by the point at which the lubricant fails and begins to carbonize. To most hands, hot is 120° to 140°F. At these temperatures and above the lubricant simply flows better and can do a better job. A thermometer is a much better instrument for measuring temperatures than is the human hand. Check those so-called hot bearings with one and find out what the operating temperature actually is before making unnecessary and sometimes costly corrective mistakes. A stable temperature within the limits of the lubricant indicates satisfactory operation.

High Bearing Temperature

A pronounced increase in temperature is an indication of danger and

a signal to investigate. One shot of grease should be added to the bearing but if this does not reduce the temperature immediately, no additional grease should be added. The unit should be checked for unnecessary loads, such as coupling misalignment, or improper packing adjustment. A temperature increase may not be an indication of impending bearing failure or excessive load, but could be due entirely to an increase in temperature of the liquid being pumped, or to an increase in the surrounding temperature during the warm summer months. Heat transfer due to increased liquid temperature can be minimized by connection of a quenching gland or bearing water jacket to cold water from the plant water supply line.

Bearing temperatures are frequently increased by lubrication practices. Excessive or over-greasing which results in pressure build up in the bearing shell greatly increases the resistance to rotation and the amount of heat generated. Removal of excessive grease from the bearing housing will lower the temperature considerably. Most pumps handling hot liquids are equipped with quenching glands and water-cooled bearings so that the actual operating temperature within the bearing may be lower than the ambient temperature of the surrounding air. High temperature greases should not be used with water cooled bearings as poor grease fluidity and inadequate lubrication may likely result.

Occasionally when pumps are first started the bearings seem to run extremely hot. This high temperature is frequently caused by the oil or grease seals, not the bearings. As soon as the seals are seated the temperature will drop to a normal level.

Dirt in a bearing will cause rapid failures. A speck of grit in the race path will start a scratch on a ball or roller. This defect is quickly transferred to adjacent members and to other parts of the race until finally the bearing grinds itself to pieces. The bearings are shipped from the manufacturer clean and dry and must be kept that way if they are to last. Clean tools, clean hands and a clean work place will insure a clean bearing being installed.

The fit of the bearing inner race to the shaft and outer race to the shell is held to extremely close tolerances, often less than one thousandth of an inch total. So close, in fact, that shafts are ground and polished at the fits and shells are bored on special machines. These fits may be destroyed only too easily. In cleaning a shaft fit with crocus cloth light strokes are required to prevent losing too much metal. Shells should not be shimmed to tighten bearing fits. By changing either fit, both the load and the load path within the bearing may be altered enough to shorten bearing life considerably.

Importance of Records

Complete maintenance records, filed in an accessible location, are invaluable in diagnosing pump failure, in ordering repair parts, in establishing lubrication and maintenance scheduling. In addition, these maintenance record cards are valuable in determining pump suitability for new requirements due to process changes. Notations of pump failures and the repairs required can be used to define the optimum period of any given pump before complete inspection and overhaul is required. If the pump maintenance record indicates that no failures have occurred over a period of years, a longer period between inspections would be warranted. On other pumps, the records may indicate frequent failures. This may suggest that semi-annual inspection and repair are required. It should also flash a red warning light —something is wrong with the pump, either in application, installation or operation. A chronological listing of failures is invaluable in diagnosing the problem and effecting its cure.

The best solution to pump maintenance problems is the application of common sense. Understanding what goes on in and around each pump gives one a base from which to work. The same technique in solving a maintenance problem can be used no matter what one's area of responsibility. Accumulated observations of the master mechanic can be as useful as the training and experience of the engineer. The pump manufacturer supplies the pulp and paper industry equipment designed and built for dependability. Competent application, installation, operation and maintenance will assure long dependable performance.

PJT NEW LITERATURE

Motor Driven
Controlled Volume Pumps

Describes reciprocating, positive displacement type, designed for precise pumping. Meter liquids accurately within plus or minus one per cent against a positive pressure differential between suction and discharge. Features selection data guide, materials selection charts and capacity-pressure selection tables. Bulletin 553-2. 29 pp. Milton Roy Co., 1300 E. Mermaid Lane, Philadelphia 18, Pa.

Moisture Control in
Paper Processes

Describes new Moist-O-Graph IV System. Accurately controls sheet moisture content over a wide range on paper machines. Has measured moisture content over 40 per cent. Is unaffected by static electricity in most installations. Explains how it works, and where it can be usefully applied. Bulletin No. 2.9-5b. 4 pp. Minneapolis-Honeywell Regulator Co., Wayne and Windrim Avenues, Phila. 44, Penna.

Peeler
Press

Describes the properties and applications of its roll covering kraft and kraft specialties, cigarette paper and semi-chemical corrugating stock. The applications of this roll covering in papermaking include: technical information, hardness range, thickness, temperature, chemical and abrasive resistance and pressures. Product Service Dept., Stowe-Woodward, Inc., 181 Oak St., Newton Upper Falls, Mass.

Pressurized
Refiner

Specifically designed for the production of highest quality pulp to exacting specifications. Its unique parallel feed arrangement serves twin refining surfaces which offer twice the capacity of a standard single runner disc refiner of equivalent disc diameter. Interesting four color cutaway artist's drawing shows the operating principles. Bulletin 212-A. Sprout, Waldron & Co., Inc., 130 Logan St., Muncy, Penn.

Plant Layout
Models

Presents plant designs for the new plant or present rearrangement of your old plant. Layout models are used including safety, material handling, and operators. Brochure. J. R. Rowland, sales manager, "Visual" Plant Layouts, 11 Pennsylvania Ave., Oakmont (Allegheny Co.) Pa.

Wet Permanent Magnet
Drum Separators

Describes units, available in both concurrent and counter-rotation styles in a variety of sizes, in wide use today primarily as concentrators of magnetic ores and for the recovery of magnetic media in heavy-density separation systems. Explains how to use this amazing ceramic magnet material. 4 pp. Bulletin No. 2013. Stearns Magnetic Products, 635 South 28th St., Milwaukee 46, Wis.

Vigorous Growth of On-Machine Coating

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Program Executive for Paperboard,
Forest Products Division, BDSA,
U. S. Department of Commerce

Output of on-machine coated paper in 1960 at 1.9 million tons, exceeded for the first time the combined tonnages of uncoated groundwood printing and uncoated book printing paper grades. The latter development is particularly remarkable in view of the fact that only 15 years ago the output of uncoated printing papers was three times larger than on-machine coated paper. Admittedly, the weight added by clay coatings and other additives is an important part of the tonnage gain of on-machine coated paper. The ascending popularity of on-machine coated over uncoated printing papers is unquestionable, judging by the fact that output of on-machine coated in 1960 is expected (when final figures are available) to increase more than 25 per cent over the 1956 level, while the uncoated grades will remain somewhat below that peak year.

Rapid Growth 1945-60

The meteoric rise of on-machine coated paper has contributed substantially to the tonnage output gains of the paper industry since the end of World War II. Accounting for 1.6 million of the 8.0-million-ton increase recorded for paper output from 1945 to 1960, on-machine coated paper currently represents twelve per cent of paper production, compared to four per cent in 1945. In fact, it has since 1945 far outstripped the tonnage output gains reported for any other major paper grade. Uncoated printing paper production rose in 1945-60 by about 800,000 tons, or just one-half the tonnage for on-machine coated papers. Annual output of body stock for off-machine coating remained fairly stable at around 275,000 tons throughout this period of sharply rising demand, indicating the switch to on-machine coating.

Acceptance of on-machine coated paper in periodical, advertising, and some book printing has been a strong influence in the 475-per cent tonnage increase in this type since World War II. The surface of coated papers, having a strong affinity for inks at high-speed printing operations, is highly desirable in the printing of fine screen halftones. On-machine coated paper, coated on two sides, has enjoyed particular success in the illustrated periodicals and books market because it enables high-quality color reproduction at a relatively low cost. On-machine coated paper, coated on one side, representing less than eight per cent of the on-machine coated paper total, is used primarily in the manufacture of can, jar, box, and other labels and wraps.

On-machine coated paper output, which is expected to increase in 1960 by about 12 per cent above the 1959 level, should expand further in the years ahead, although perhaps not as sharply as in the past.* History indicates that a new product assumes a more normal growth rate once the initial, market-saturation level is reached. Thus, in the period 1945 to 1950, production rose by a phenomenal 205 per cent; in the next 5 years (1950-55), the output rate of gain slowed to 29 per cent; and in 1955-60 the pace accelerated to 45 per cent.

Consumption Trends

Recent improvements in on-machine coating methods have raised overall plant efficiency and have provided an improved product. The continuing research program within the industry should yield further benefits to the producers and consumers of coated papers. Some on-machine coated paper manufacturers, working with the printing and publishing industries, are producing a lighter weight, coated paper to help offset the recent postal rate increases in third-class-mail delivery.

The current uptrend in demand for periodicals and books, stimulating corresponding increases in on-machine coated paper production, should continue. Although competition from films and foils poses some threat to on-machine coated (one side) label paper, the development of new uses should largely offset such losses. Nor is the trend to lightweight on-machine coated (two side) paper expected to affect future tonnage production gains materially.

Increased demand is expected to result from rising population, school enrollment, educational levels, personal income, and leisure time in the United States. But in addition, growing literacy in a world contracted by air travel advances should stimulate a decided step-up in the globe-wide exchange of information. The U. S. industry may be called upon to support this potential upturn in printing paper requirements.

Output Concentrated in North

Including Louisiana, where production began in 1959, the States producing on-machine coated papers now number 13, one more than in 1949. Massachusetts curtailed production of this grade early in the 1949-1959 period, whereas Washington began its on-machine coating operation in 1955. The States, by Census Bureau regions, are: Northeast region — Maine, New York, and Pennsylvania; North Central region —Ohio, Michigan, Minnesota, and Wisconsin; South region—Louisiana, Maryland, Tennessee and Texas; West region—Oregon and Wash.

The tonnage output of the respective states is not disclosed because of the relatively small number of producers in each state. Available Census regional production data indicate interesting shifts in the 1949-59 period. The **North Central region** retained its number one status in 1959 by virtue of a 71-per cent increase in output to 751,000 tons, but its rate of gain was markedly below the Nation's 92-per cent advance to 1,706,000 tons. The below-average performance reduced the North Central region's share of the U. S. total from 49 per cent in 1949 to 44 per cent in 1959.

The second-place region, the **Northeast,** posted an increase of 110 per cent of 593,000 tons and raised its share of the national output from 32 to 35 per cent in the decade.

The scarcity of producing mills prevented the showing of separate data for the **South and West regions.** These regions together accounted for 360,000 tons in 1959, a 118-per cent gain that raised their share of the U. S. total to 21 from 19 per cent.

From the U. S. Dept. of Commerce, BDSA, Pulp, Paper and Board Industry Report, Volume XVI, Number 4, released January 16, 1961.

*Editor's Note—a recent survey indicates a 7% increase in capacity for this grade during 1961.

Nibroc Offset Sales Prompt Major Finishing Expansion by Brown Co.

An S-shaped flow of jumbo rolls through a turntable backstand, automatic sheet cutter, trimmers, and carton sealers has doubled production and delivery of these fine papers.

Robert Strachan,
Industrial Engineer,
Brown Co.

When the Brown Co. of Berlin, N. H., New England producer of pulp, paper and forest products, decided a few years back to enter the offset and fine printing papers market, it wasn't long before officials were forced into another decision—a major expansion of their finishing room facilities. The almost immediate acceptance of the company's new grades of fine papers was beyond even the most optimistic forecasts. Fortunately for the company and its customers, the expansion program was put into effect with dispatch and today the company's Cascade mill at Gorham, N. H., boasts what is one of the most modern and efficient finishing room operations.

A work flow-chart that resembles an inverted "S" (See Schematic Layout) is symbolic of this new operation which more than doubles the speed with which these fine papers are now produced and delivered. Obviously, the expansion program was not evolved and completed overnight. When it was first decided to enter the fine paper offset market, the company's industrial engineering department was called upon to set up a production area for the finishing operations.

At that time, the industrial engineers were able to appropriate a working area by reshuffling the jumbo roll storage procedure. Following the decision to expand, industrial engineering was once again asked for recommendations.

New Building Erected

With a top priority rating given to the job, the engineers wasted no time in surveying existing areas. Several alternative plans were drawn up and some of them seriously considered but after careful study all were discarded because of their "Rob Peter to pay Paul" aspects. After reviewing recommendations, management's final decision was to erect a new building.

The new building took the form of a one-story, cement block structure with a basement storage area

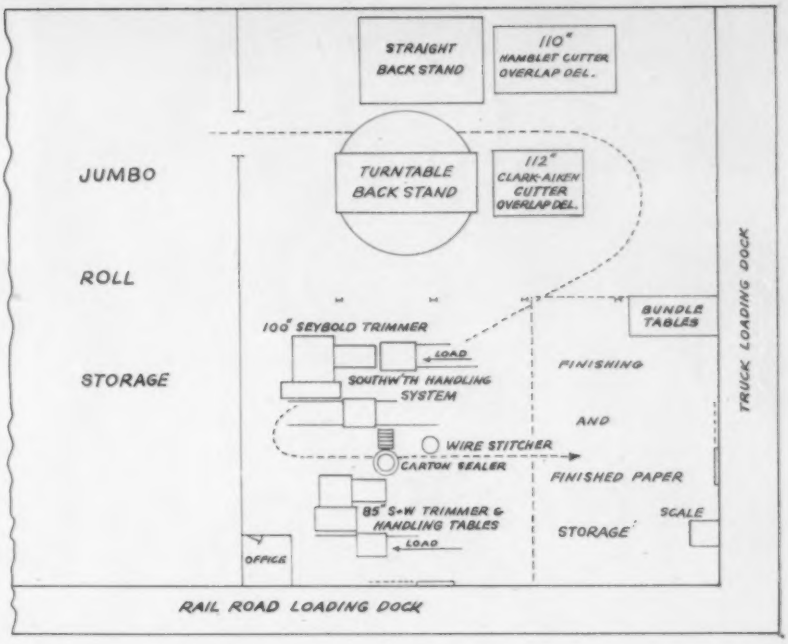
FIGURE 1. LOADING SHEETER—While sheeting operations are going on, crew places new rolls in position at opposite end of rotary roll stand of new sheeter.

FIGURE 2. CASEY JONES—entire roll stand of new Brown Co. sheeter rotates on tracks, like an "engine roundhouse" turntable, and eight reserve rolls of Nibroc offset paper come into position.

and was attached directly to that part of the Cascade mill which was currently housing the finishing operation. (It should be pointed out that besides supplying an area where proper, modern equipment could be efficiently installed for the finishing operations, the basement was specified to ease a predicted storage problem for the towel division.)

Studies revealed that 35 per cent of the shipments from the Cascade mill were made by truck and that this figure was increasing, therefore, a shipping dock was included as part of the new building. The new dock is large enough to accommodate 12 trailer trucks at one time, all of which can be loaded simultaneously under a canopy where they are protected from the weather, thus guaranteeing uninterrupted loading the year round.

The production, storage and loading area included in the new building has had the immediate advantage of eliminating excessive broke caused by extensive handling and has also eliminated the need for leasing temporary storage space during certain periods, and has had the invaluable advantage of allowing the paper machines to maintain maximum production even during periods when orders fluctuate due to seasonal variations. The latter is possible because of the additional storage.



Modern Sheeter Installed

While plans for the new building were being formulated, a corresponding effort was being made by sales, production and engineering to determine the best possible machinery and layout for the finishing room.

Pride of the new finishing room is a high speed and fully automatic Clark-Aiken sheeter with overlapper and a rotating multiple roll-stand, which holds 16 rolls of paper each 112 inches wide. The new rotary cutter makes possible more accurate cutting at a production rate more than double that of the previous equipment. Depending on basis weight, up to eight rolls of paper may be sheeted on the Clark-Aiken at one time. While sheeting operations are going on, the machine crew is placing fresh rolls of paper at the far end of the roll-stand. (Figure 1).

When the rolls being cut are exhausted, the entire roll-stand rotates 180°, the reserve supply of paper comes into position (Figure 2), and in a matter of seconds, is ready for feeding into the machine and cutting. The rotary roll-stand eliminates nearly all the "down time" formerly needed on older-type sheeters.

As the rolls of paper are cut into sheets of the required width and length, an automatic layboy at the end of the machine is gradually lowered while the piles of paper on it grow higher and higher. (Figure 3). The sheeter not only cuts but also counts the sheets of paper and slips ream-markers between sheets as desired quantities are cut.

Beside the new Clark-Aiken sheeter stands a remodeled 110-inch Hamblet sheeter (see schematic layout), improved with the installation of a new overlapping delivery system for the layboy, a new drive and a new cutting knife, enabling it to handle increased quantities of paper at higher speeds. Production efficiency of the Hamblet itself has been increased nearly 50 per cent.

Working together these machines have permitted a large increase in production of Nibroc offset papers

FIGURE 3. AUTOMATIC LAYBOY—As rolls are cut to required sheet size, automatic layboy gradually lowers. New Clark-Aiken sheeter also counts sheets and inserts ream markers automatically.

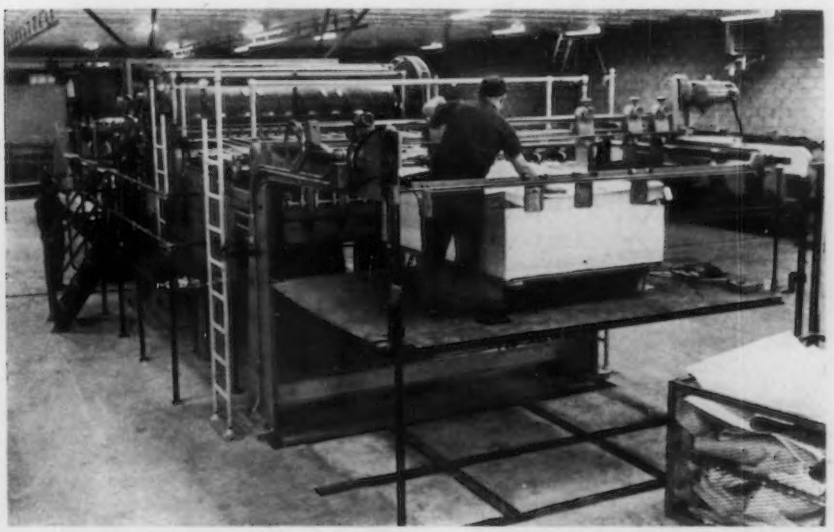


FIGURE 4. AUTOMATIC LOADING TABLES—Rear view of new Seybold trimmer shows series of Southworth automatic loading tables. The system eliminates automatic lifting of sheets, thus allowing a full trimmer load of paper to be cut each time.

and Triple-A line of envelope papers, thus providing the needed capacity to meet present increased customer demands for quick deliveries and increased quantities. Working at full capacity, they are designed to satisfy predicted sales requirement.

Roll Handling Improved

Reference to the schematic layout shows the inverted "S" design of the workflow. To facilitate and speed up the material handling operations, a new 7,000 pound electric powered roll clamp truck was purchased for the new finishing room. Use of the new truck has made it possible to expand the finishing room operations by cutting rolls up to 42 inches in diameter instead of 32-inch diameter rolls, thus reducing the number of rolls handled and the downtime which was previously experienced in roll changes.

After the cutting operation, with a minimum of handling, the sheets of Nibroc paper are transported to the second operating stage.

Completely Automatic Trimmer

A new 100-inch Harris-Seybold trimmer, latest and most modern equipment now available for trimming sheeted papers, makes up the second piece of the major equipment installed in Brown's new Cascade finishing room. The new demand for large size sheets and the increasingly high speeds of modern printing presses require new standards of accuracy capable only with the new trimmer.

When the pre-counted lifts of paper arrive at the trimmer they are positioned to the rear of the machine, at the end of a series of Southworth automatic loading tables. (Figure 4). At a controlled rate the loading tables supply the timmer with a continuous flow of work, keeping downtime to a minimum. The Southworth system eliminates manual lifting of paper, thus allowing a full trimmer-load of paper to be cut each time.

The new trimmer is fully hydraulic and is equipped with an automatic spacer for greater speed and accuracy in trimming fine Nibroc offset printing papers into various sheet sizes required by customers. A change in the automatic trimming cycle can be set into the machine in a matter of minutes. With its 100-inch opening (the trimming blade is actually 111¾ inches long), the trimmer can easily handle the largest size sheets normally used in the printing industy. These generally run four feet wide and six feet long. The new Seybold is designed so that the trimmer blade cannot move unless the operator uses both hands to set it in motion. Two bars, located well above the blade and mounted on the outside housing of the trimmer, must be pressed at the same time (Figure 5) to start the blade.

To make room for the Seybold trimmer, the Finishing Department's 85-inch Smith Winchester trimmer has been installed to one side where it fits into the work flow.

In the very short time since Brown has operated its scientifically planned finishing room and its new equipment, it has been able to handle the larger sizes of Nibroc papers swiftly and efficiently. Best of all it can guarantee the more accurate trim which is so essential to customers using fine printing paper.

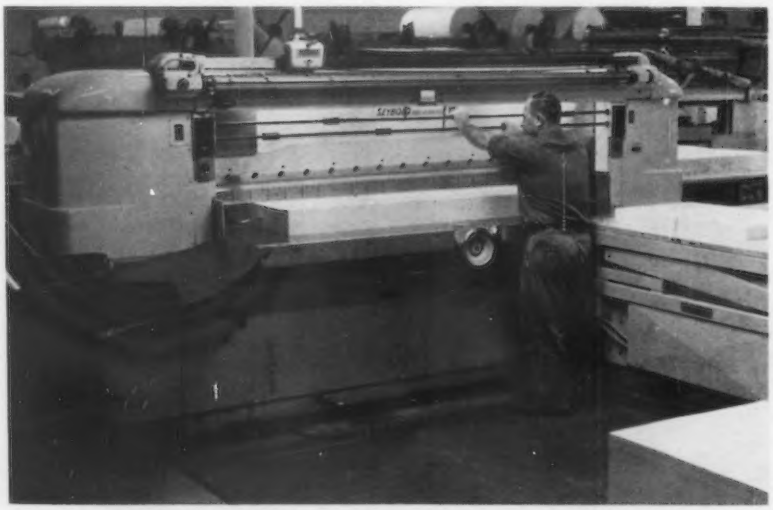


FIGURE 5. COMPLETELY SAFE—New automatic trimmer is designed so that the blade cannot move unless operator uses both hands to start it.

Stress Coating Advances At WMU Conference

The fifth annual paper conference at Western Michigan University Thursday, January 19, proved to be a rousing success as more than 250 persons from at least 17 states were on hand for the day-long technical meeting, and a luncheon which became a farewell tribute to Dr. Alfred H. Nadelman.

Theme of this conference was "Recent Advances in Coating Methods," and five papers were given during the morning session concerning operating aspects of several different coating methods. The speakers formed a panel with Dr. R. A. Diehm as moderator, for the afternoon session during which members of the audience questioned the panel in great detail.

Speakers at the morning sessions were: Richard C. Porter, S. D. Warren Co.; C. A. Blaine and H. Mertz, Blandin Paper Co.; C. G. Whelpton, Champion Paper and Fibre Co.; Karl Halladin, MacSimBar Paper Products Co., and Daniel E. Bergsma, Packaging Corp. of America.

At the luncheon Dr. Nadelman, who leaves the WMU paper technology faculty January 31, was the speaker, discussing his "Twenty-five Semesters at Western Michigan University." He expressed great appreciation to industry for its help in getting the program at Western started, and in particular to William A. Kirkpatrick, president of Kalamazoo Paper Box, Inc., and to Earnest E. Ludwig, formerly vice president, Birmingham-Prosser Co., and now executive secretary, Paper Technology Foundation, Inc., for their foresight in envisioning such program and bringing it into being.

New Advisory Committee Chairman

Preceding the conference William A. Kirkpatrick, president of Kalamazoo Paper Box, Inc., was elected chairman of the Advisory Committee for Paper Technology at Western Michigan, at the annual meeting of the committee. He succeeds Bert H. Cooper, who has just completed a second two-year term as chairman. Robert D. Caine, executive vice president, KVP Sutherland Paper Co., is the new vice chairman, and Dean George E. Kohrman, WMU School of Applied Arts and Sciences, is secretary.

In another meeting the same day all officers and directors of the Paper Technology Foundation, Inc., were re-elected, with Bert H. Cooper serving as president, and Earnest E. Ludwig as executive secretary.

PANEL SESSION: C. G. Whelpton, Champion Paper and Fibre Co.; Richard C. Porter, S. D. Warren Co.; Karl Halladin, MacSimBar Paper Products Co.; D. E. Bergsma, Packaging Corp. of America, and C. A. Blaine, Blandin Paper Co.

Blade Coating Both Sides of the Sheet

An installation of Beloit blade coaters at S. D. Warren Co. was discussed by Richard C. Porter, assistant paper machine superintendent. This was made on one of their paper machines, following several years of development work on this method of coating on various pieces of equipment throughout the plant. As a result of this experimental work, the decision was made to install two blade coating stations, one for each side, on the machine. The blade coater installation follows an existing precoater installation on this machine.

The coating stations are of the puddle type, where the coating pond is held by the doctor back, the blade retaining the coating in the pond, or puddle. Coating weights from three to eight pounds per side are applied at each blade coater, depending on grade. Finished sheet weights from 50 to 80 pounds are run at speeds from 450 to about 800 f.p.m.

Quality has been all that was expected, and overall machine efficiency since the double coating operation started has not suffered as much as first expected. In attempting to reach design speeds, however, it was found that there was insufficient drying capacity in the first after dryer section. Attempting to remedy this, another high velocity air cap was added on the second bottom dryer. Using both air caps at maximum drying rate gave trouble with low grade cockle in the sheet. It was evident that this type of high velocity drying was leaving shrinkage stresses in the sheet. The remedy finally adopted was abandonment of both air caps and adding two 4 foot cylinder dryers to this after dryer section, making a total of seven.

Mr. Porter said, "As to operation of the blade coaters in particular, we have found it necessary to use expander rolls and special paper rolls in leading the sheet onto the coater backing rolls, and again on the sheet after coating to lay it smoothly on

the first dryer. End dams are, perhaps, the worst problem in puddle type coater operation. Various designs have been tried, but none really solve this problem. Changes in blade pressure change the flexing of the blade, and leaks at the end dams result. We have been successful in blade coating with all common pigments and adhesives, provided we keep our solids and viscosities within reasonable limits."

Pressure Curtain Coater For Converting Processes

A paper given by Daniel E. Bergsma, senior research chemist for Packaging Corp. of America, described in detail a recently developed coater called the Steineman pressure curtain coater. Purchased primarily to apply lacquer coatings to solid fibre beer case blanks, the unit has the advantage of eliminating waste of coating material, since all of the converting operations are completed before the blank is coated.

The pressure curtain coater is housed in a rigid steel framework which supports the coating head, the circulating or pumping system, and the conveying system. The head is constructed of cast aluminum alloy with a removable type for cleaning and a "v" shaped interior. The orifice, where curtain formation occurs is formed by two precision ground knives which resemble planer knives. One knife is stationary, while the other is movable by means of an adjusting handle working through an eccentric. The adjusting handle has a calibrated dial to indicate the settings.

As finish material is pumped into the airtight head, a cushion of trapped air is formed at the top. The coating material is forced out through the lower orifice as a thin sheet or film of uniform and controlled thickness. This flowing liquid curtain extends over the width of the coater, perpendicular to the travel of the object to be coated. The curtain width is maintained by stretching it between vertical wires at each end. These wires also provide the framework on which the curtain may be formed.

The conveying system which transports blanks through the curtain is an endless belt which dips under the collection trough on the infeed side and returns back to table level to form the outfeed conveyor for the coated stock.

The blank emerges on the other side of the curtain completely coated and is carried by the conveyor belt to the drying oven. The coater normally runs at a speed of 500 f.p.m., while the drying oven is limited to 140 f.p.m. Deceleration of the blanks as they enter the oven occurs naturally as the blank passes onto the slower moving oven conveyor belt.

The coating film thickness laid down may be controlled by regulating the amount of coating material pumped to the head or by changing the speed of the conveyor system. In brief, the coating weight applied to the stock varies directly with the pumping rate and inversely with the machine speed.

The gap between the knives forming the curtain orifice and the height of the coating head above the stock are also variable. Although these adjustments do not affect the final coating weight applied they have a definite effect on the runnability or application of the coating.

There appear to be two primary factors regarding coating materials which directly affect curtain formation and coating suitability for a curtain coater operation. These are viscosity and surface tension.

The need for moisture vapor barriers and anti-abrasion coatings in today's corrugated container markets is well known. The pressure curtain coater provides an efficient means of applying these coatings as hot melts or waxes. For the first time it is possible to apply these coatings to corrugated board smoothly and uniformly with the absence of the familiar crow-tracking which has characterized these coatings for a long time. The improved appearance, uniformity, and attendant material savings this makes possible, may make this application of the curtain coater one of the most popular in the board industry.

Capabilities of Full Scale Levelon Coater

The Levelon coater was discussed by Karl Halladin, now general superintendent of MacSimBar Paper Products Co., but formerly with Waldorf Paper Products Co. This coater is designed for metering and smoothing high solids, high viscosity aqueous pigmented coatings on paper and board at high speeds over a wide range of coating weights while producing a level surface free of coating streaks.

The only full scale model known has been operating on an intermittent basis for the past year on a 130 inch fourdrinier paper machine at Waldorf Paper Products Co., in St. Paul, Minnesota. To date only several weeks total operating time has been put into the coater.

The coating is applied to the sheet by a color roll traveling the same direction as the web. An excess of coating is applied with this roll. The quantity applied depends on the viscosity of the coating and the speed of the color roll. This roll is operated to give a good pattern leaving the color roll. The sheet with this excess coating then travels through the nip, consisting of two rolls. The inside roll is called the backing roll, while the outside roll is called the Levelon roll. A stop is between these rolls which is varied depending on the caliper of board being coated. The nip of these rolls is air loaded to apply up to 50 lbs. pressure per lineal inch. The coating is metered and smoothed passing through this pressure loaded nip. The excess is removed by the Levelon roll which, in turn, is cleaned by an oscillating doctor blade.

The Levelon coater is designed to apply a smooth coating to paper or paperboard. By its design a relatively rough board can be coated to a smooth surface. But as is universally true the smoother the base sheet the smoother the final coated sheet. It was found that as wet end formation was improved the final coated sheet was improved. Another significant feature of this coater is its streakproofness. There is no place for dried particles of coating or fibers from the board to lodge. The flushing action of the Levelon roll carries away from the nip any particles or lumps and the coating on the Levelon roll is doctored clean.

"In actual operation," said Mr. Halladin, "we attempt to apply the minimum amount of coating. We have applied less than 1 pound per 1,000 sq. ft. to greater than 5 pounds per 1,000 sq. ft. The upper limit has been governed by the drying limitations. We have coated board from .012 to .026 in caliper. We have been extremely pleased with the quality

James W. Miller
WNU President

Bert H. Cooper, left, and William A. Kirkpatrick

Alfred H. Nadelman
Dept. of Paper Technology

surface produced by this coater. In our short period of operation we feel that we have developed a coated surface on a bleached food board equal or superior to any printing surface on the market."

The Trailing Blade Coater as Used at Blandin

In a paper prepared by C. A. Blaine, coating superintendent, and H. Mertz, coating research, it was told how Blandin Paper Co. uses the Rice Barton trailing blade coater for high speed, off-machine production of letterpress and rotogravure papers. An off-machine installation was chosen because of the need to supply to the trailing blade coater base rolls of good mechanical quality and because it was felt that the down time factor would not allow an efficient "on-the-machine" coating operation.

With experience gained with their first coater, management moved ahead with the installation of a second trailing blade coater in 1959, which is called the No. 3 coater.

Looking toward the future of higher paper machine speeds, the new coater was designed for 3000 f.p.m. The final design incorporated many new features based on Blandin's operating experience with the No. 1 coater, and it incorporates the use of high velocity hot air Gardener dryers and a very complex arrangement of electric drives.

It was felt that the following items are pertinent reasons for successful off-machine operation.

1. Looking at the floor plan of the operation it can be seen that the equipment is arranged so that each operation is in the logical position to produce a smooth flow of paper with a minimum of handling and equipment.

2. With the off-the-machine arrangement Blandin has been able to rewind and trim the base roll from the paper machine and present a mechanically sound sheet to the coater. All machine breaks are spliced, hole removed, edges trimmed smooth and the rolls wound at uniform tension.

3. In conjunction with the mechanically sound base sheet the mill has been able to coat at high speed because of the design of a flying splicer, electric drives and tension controls, and the design of the reel which allows all operations of the flying splicer and reel to take place at full coating speed.

4. And finally, with the off-the-machine arrangement, Blandin has been able to absorb the necessary down time for the coater without affecting the efficiency of the paper machine.

Variety of Coatings With Champflex Coater

C. G. Whelpton, assistant manager, European and Licensing Division, Champion Paper and Fiber Co. spoke on one of the major advancements in the paper coating industry during the 1950's, the development of the Champflex Coater. He said that this coater is Champion's solution to a number of problems facing the industry—such as that of producing acceptable quality with simple, inexpensive and stable equipment. Its success seems assured by the number of mills which have taken licenses to use the Champflex coater, and by the number of requests from other mills for equipment to conduct pilot plant trials.

The Champflex principle may be embodied in any of several different arrangements or configurations. On some Champflex coaters, coatings are applied to the web as it passes through a pond of coating. Other Champflex coaters use one or two dip (or applicator) rolls revolving in a trough of coating to apply it to the web.

Champflex coaters are commonly located after a breaker stack having 2 or more rolls. A moisture content in the paper or board on the order of 5 to 8 per cent required.

The Champflex is distinguished from other trailing blade coaters by its unique use of a small-diameter rotating rod held in a spring mounting to doctor excess coating, instead of using a flexible razor-like blade to trowel the coating.

The nature of the Champflex coater permits a wide variety of coatings to be used. Bone-dry solids can range from less than 30 to over 60 per cent, though the usual level is around 45 per cent to 55 per cent. Coatings with viscosities as low as 50 and as high as 11,000 centipoises have given satisfactory results (Brookfield 20 rpm, 80°F, No. 5 spindle). Coat weights have varied depending on such factors as the stock, coating solids, and viscosity, rod diameter, and number of applications. One coater can apply from 3 pounds to 15 pounds of coating per ream (25 x 38—500) on uncoated stock, but the usual range is from 6 pounds to 8 pounds. On precoated stock, the normal range of coat weight is 4 pounds to 5 pounds, though the extreme range is from 1 pound to almost 14 pounds per ream.

PJT NEWS OF SUPPLIERS

W. S. Wood

E. H. Neese

A. J. Reichers

J. N. Franklin

Beloit Eastern Corp. has elected W. S. Wood, chairman of the board, and E. H. Neese, Jr., president and general manager, of its plant in Downington, Pa. John R. Walsh, formerly vice president and general manager, has been appointed vice president and general plant manager of Beloit Iron Works, Beloit, Wis.

Mr. Walsh's appointment fills the vacancy left by W. E. Watson's recent appointment as president, Beloit International Corp., C.A., Zurich, Switzerland.

Process Equipment Manufacturers Ass'n. has held its first annual meeting on January 12 at the Harvard Club, New York. One of the principal purposes of the newly formed association is to assist its member companies in improving the efficiency of their operations and thereby rendering increased services to their customers.

J. D. Hitch, Jr., director of Dorr Oliver, Inc., is president, and Harlowe Hardinge, president of Hardinge Co., is vice president. R. P. Kite is executive secretary-treasurer.

The Executive Committee is composed of: Calvin A. King, president, Bird Machine Co.; P. H. Mulcahy, manager, Wemco Div., Western Machinery Co.; Harold M. Soars, president, Sprout, Waldron & Co.; A. L. Bolton, Jr., treasurer, John W. Bolton & Sons; A. J. Chubb, general manager, Raymond Division, Combustion Eng., Inc.; H. J. Douglas, general manager, Pennsylvania Crusher Division, Bath Iron Works; H. I. Edwards, vice president, Pfaudler-Permutit, Inc.; Milton Spiegel, general manager, Chicago Pump Div., Food Machinery and Chem. Corp.; and E. C. Swift, president, The Sharples Corp.

Rice Barton Corp., Worcester, Mass., announces that Albert J. Reichers has joined the company as manager of manufacturing.

Prior to joining Rice Barton, Mr. Reichers was plant manager for Cooper Alloys of Hillside, N. J. As plant manager, he supervised production control, manufacturing engineering, plant engineering and production activities at Cooper.

Before joining Cooper Alloy, Mr. Reichers was general foreman of the machine shop for the Federal Shipbuilding and Drydock Co. in Kearny, N. J. He spent 11 years with Federal, working his way up from machinist to general foreman.

Bowen Corp., consulting engineers of Cambridge, Mass., announces that John N. Franklin of Montreal, P.Q., Canada, has joined the company. Mr. Franklin is serving in an engineering and sales capacity for Bowen's Canadian clients.

A graduate of the University of Toronto in mechanical and industrial engineering, Mr. Franklin has more than 30 years' experience in the pulp, paper and other process industries. His work has taken him to most parts of the world. During the last 15 years he has served in technical and research capacities as well as in mill management with Bowater's in Newfoundland, England and New Zealand. He will add this experience to that of his associates in the Bowen organization who design, engineer and install industrial processes for the mechanical, pulp and paper, pharmaceutical and food industries.

"I refused—to modernize and improve"

BLACK-CLAWSON V-P Montville (left) receives pin from V-P Vokes

The Black-Clawson Co., recently presented a diamond emblem to commemorate his 40 years with the company to Don H. Montville, vice president and director of sales for the Shartle Division. Robert F. Vokes, vice president and general manager of the division, made the presentation at an anniversary luncheon in Middletown, Ohio, honoring Mr. Montville's major contribution to the growth of the Shartle Division.

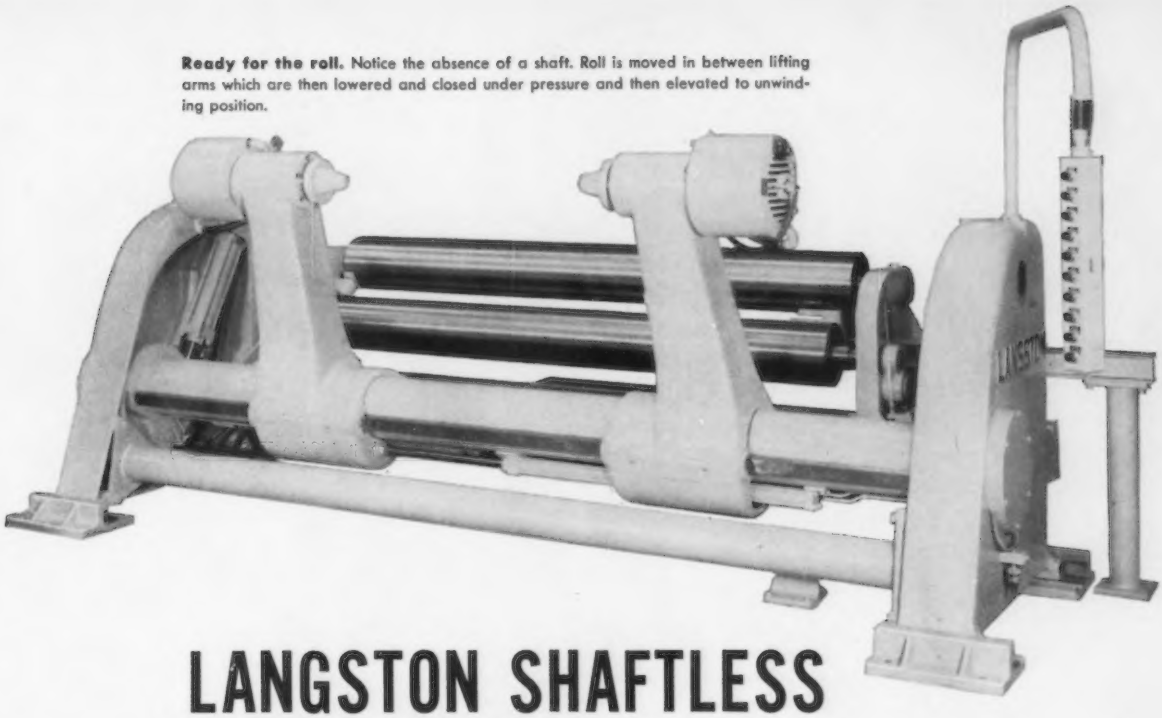
J. O. Ross Engineering, a Division of Midland-Ross Corp., recently moved its Seattle office.

Formerly at 823 Skinner Building, the Ross office is now located at 2909 Third Avenue, Seattle 1, Wash.

Paul Goldner is the Seattle district sales manager.

Hyster Co., Portland, Ore., has named Don W. Smith Midwest regional representative for its Industrial Truck Division. Mr. Smith has been associated with Hyster's retail branch in Chicago since 1958.

Ready for the roll. Notice the absence of a shaft. Roll is moved in between lifting arms which are then lowered and closed under pressure and then elevated to unwinding position.



LANGSTON SHAFTLESS UNWIND STAND

Boost your production . . . reduce your slitting and rewinding costs

Easy, fast, completely safe. One man does everything. Operating push-button controls, he closes lifting arms, elevates roll, sets brakes.

One man can load the heaviest roll. No heavy shaft to handle. No cone tightening. No couplings to engage. No crane lifting. Just pushbuttons. This is the Langston standard shaftless unwind stand for rewinding and converting applications.

You not only save time, you also get better unwinding. Roll can be positioned laterally by push-button control—even when the machine is running. It's held firmly under pressure for complete safety throughout the unwind. Several braking arrangements can be provided to handle a wide range of grades and conditions. Available extras provide for handling very narrow rolls; for constant tensioning; for automatic braking of idler rolls; for automatic web alignment and side register control; for web oscillation; and for local or remote control.

This new Langston shaftless unwind stand can be used with any make of slitter. Available for maximum roll widths from 36 to 140 in. and diameters from 14 to 84 in. For complete information, write Samuel M. Langston Co., Camden 4, N. J.

Langston *LEADERSHIP... BY DESIGN*

The Honeywell Control Valve (foreground) regulates flow of Bunker C fuel oil burner in a chemical process drying system. In the background, a Honeywell diaphragm actuator operates a damper for control of hot air return. Nothing spectacular going on here, but the results of the entire process could well depend on these valves.

The final results—the payoff of the process—are dependent not just on how well these valves are made, not just on their capacity or sensitivity, but on *all* of these things combined . . . plus the process control knowledge that first put them to work, and the know-how that keeps them on the job.

Here, as in all Honeywell Control Valve applications, *every* aspect of valve performance has been considered in relation to the overall control system. It is this "whole picture" approach that sets Honeywell Control Valves apart, and rewards you with better processing.

Write today for your copy of our checklist, "25 Ways to Be Right" . . . in selecting control valves.

MINNEAPOLIS-HONEYWELL, Fort Washington, Pa.

HONEYWELL INTERNATIONAL
Sales and Service offices in all principal cities of the world. Manufacturing in United States, United Kingdom, Canada, Netherlands, Germany, France, Japan.

Photographed at Davison Chemical Company, a division of W. R. Grace & Company.

Prices of Fibers

MARKET WOOD PULP

FIRST QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ 90.00	$82.50/ 90.00	$90.00/ —	$90.00/ —	$90.00/ —
Bleached Gw'd.	97.50/100.00	97.50/100.00			
Kraft, Blchd.	‡140.00/150.00	‡140.00/150.00	150.00/ —	150.00/ —	150.00/ —
Kraft, Blchd. Hdwd.	135.00/140.00		140.00/ —		
Kraft, Semi-bleached.	130.00/140.00				
Kraft, Unbl.	117.50/125.00	125.00/ —	125.00/130.00	125.00/ —	
Sulphite, Blchd.	‡135.00/140.00	‡135.00/140.00	140.00/ —	140.00/ —	140.00/ —
Sulphite, Bl. Hdwd.	135.00/ —				
Sulphite, Unblchd.	125.00/ —	125.00/ —	125.00/ —	125.00/ —	125.00/ —
Sulphite, Unb'l. Gl'sn.		140.00/ —	134.00/ —		
Soda, Blchd.	130.00/135.00	130.00/135.00			

‡ Depending on Brightness.

COTTON LINTERS

F.O.B. OIL MILLS

WEEK ENDED JANUARY 10

	Atlanta	Memphis	Dallas	Los Angeles
Grade 1	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	n.a.	8.00/7.50
3	$7.00/6.50	$7.50/7.25	$7.50/7.00	7.25/6.75
4	6.50/5.75	6.50/6.25	6.50/6.25	6.50/6.25
5	5.75/5.25	5.75/5.50	6.00/5.50	— /6.00
6	5.25/4.25	5.00/4.75	5.25/5.00	5.00/4.25
7	4.25/3.50	4.25/4.00	4.75/4.00	n.a.

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	Jan. 16	Jan. 16	Jan.	Jan.
No. 1 Mixed Paper	$ 7.00/ 9.00	4.00/ 7.00	6.00/ —	12.00/ —
No. 1 News	12.00/ 13.00	11.00/ —	11.00/ —	12.00/ —
Overissue News (Lg. size)	11.00/ 13.00	9.00/ 11.00	16.00/ —	18.00/ —
Mill Wrappers	19.00/ 22.00	9.00/ 11.00	9.00/ —	13.00/ —
Old Corrugated Containers	19.00/ 20.00	17.50/ 18.00	18.00/ —	17.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	— / —	28.00/ —	50.00/ —
New Double Kr. Ld. Corr. Cuts	27.50/ 30.00	30.00/ 32.50	30.00/ —	27.50/ —
(Semi-chem. medium)	45.00/ —	45.00/ —	42.50/ —	— / —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	52.50/ —	— / —
New Br. Kraft, Env. Cuts	65.00/ 70.00	65.00/ 70.00	47.50/ —	45.00/ —
New Br. Kr. Bag Waste Prntd.	50.00/ 55.00	50.00/ 60.00	47.50/ —	35.00/ —
New Br. Kr. Bag Waste Unprintd.	55.00/ 60.00	60.00/ 65.00	55.00/ —	42.50/ —
No. 1 Groundwood Shvs.	25.00/ 30.00	20.00/ 25.00	10.00/ —	30.00/ —
White Newsblanks	42.50/ 45.00	47.50/ 52.50	30.00/ —	55.00/ —
No. 1 Soft White Shvs.	55.00/ 60.00	55.00/ 60.00	50.00/ —	75.00/ —
Super Soft White Shvs.	65.00/ 75.00	70.00/ 80.00	60.00/ —	— / —
Hd. White Shvs.	75.00/ 80.00	80.00/ 90.00	75.00/ —	85.00/ —
Hd. White Env. Cuts	90.00/ 95.00	100.00/105.00	80.00/ —	103.00/ —
Col. Tab. Cards	40.00/ 42.50	40.00/ 42.50	35.00/ —	35.00/ —
Manila Tab. Cards	57.50/ 60.00	57.50/ 60.00	55.00/ —	60.00/ —
No. 1 Col. Ledger	32.50/ 35.00	30.00/ 35.00	35.00/ —	18.00/ —
White Ledger	45.00/ 50.00	42.00/ 47.00	45.00/ —	45.00/ —
Mixed Book & Mag.†	— / —	— / —	8.00/ —	— / —
No. 1 Books‡	15.00/ 17.50	18.00/ 22.00	22.50/ —	14.00/ —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

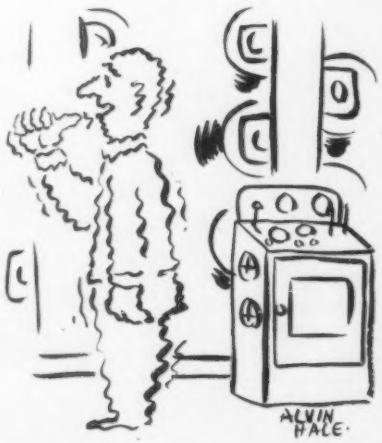
German Firm Chronicles 5000 Years of Paper

Vom Papier. (About Paper.) Feldmuehle Papier und Zellstoffwerke, Duesseldorf, West Germany, 1960. Pp. 191. Illus. Available only by courtesy of the management.

In this beautiful book, the well-known German paper company celebrates its 75th birthday. Unlike many commemorative books, it leaves to the last its own history and begins with a massive section (70 pages) on the history and technology of communications, recording, and packaging. This covers 5,000 years—literally—from 3,000 B. C. to the present. Very telling are the contrasting photographs of past uses of paper with the present day uses.

The chronological record, with characteristic German thoroughness, starts with the Rosetta stone in 3,000 B. C. and includes all subsequent major developments in manufacture and uses of paper. For example, and worth noting, it was in 1840 that Friedrich Gottlob Keller succeeded in making groundwood pulp of poplar. The process was patented in Saxony five years later. In 1852 the first two commercial pulp-grinders were built by Heinrich Voelter and it was not until 1866 that two of these new machines were imported and installed in Curtisville near Stockbridge, Mass. (This sequence of events is here set straight.)

The second section of the book (73 pages) deals with world paper production statistics in three major parts. The first part is in the form of elaborate tables for the years 1938, 1950, '53, '56, '57, '58, and '59,



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LOWERS YOUR COSTS, SALVAGES CORES

Sandy Hill's new Roll Splitter gives you fast, clean splitting of reject paper rolls for repulping, and saves you money 3 ways:

1. No expensive hydraulic installation. Weight of blade assembly is all the pressure needed.
2. Little space needed for installation. No expensive mill alterations required.
3. Operator can stop splitter before blade reaches core, giving you substantial savings on roll core salvage.

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WILL COOK THE NOW POPULAR HIGH TEMPERATURE STARCHES.

YOUR TECHNICAL MEN HAVE **IDEAS** — THIS IS THE TOOL TO DEVELOP NEW AND BETTER - - -

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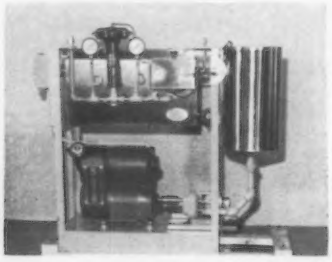

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Thermal Equipment Corporation
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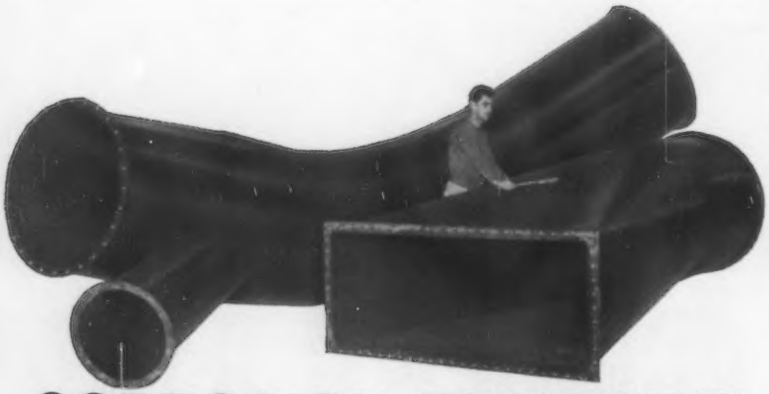
ORchard 5-5254 SKOKIE, ILLINOIS



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BOX 37-E • ARCADE, NEW YORK

for each country in Europe, North America, Central and South America, Africa, Asia, Australia and New Zealand, and for the whole world. The production data are given separately for (a) Paper and Paperboard, (b) Chemical Pulp, (c) Groundwood, with superb charts in color for each country and product and for world totals. This part is so graphic it needs no knowledge of German to be readily understood.

There follow (part 2), statistics on import and export (for the same years) by countries and world totals. These data are separated for paper and paperboard and for chemical pulp with colored diagrams to correspond. Finally, tables and charts show (by countries and the world) the consumption of paper, paperboard, and chemical pulp.

In part 3, the countries of the world are listed as to volumes produced (the first five are U.S.A., Canada, Great Britain, Russia and West Germany). Then the leading manufacturers: I.P., C-Z, Bowater, St. Regis, Container Corp. are the first five, Feldmuehle is a modest 29th in this list. This part also includes statistics on land and forest areas, yearly cut and miscellaneous data on newsprint, conversion factors (in German and English), etc.

The last 17 pages tell the history of Feldmuehle. Started in 1885 in Liebau, Silesia, by a Dr. L. Gottstein, it was moved to Breslau ten years later. In 1910 a large groundwood and sulphite plant was built in Stettin and the headquarters of the company were moved there in 1916. Not until 1938 did the company move to Berlin, following a period of rapid expansion in the 30s. At the end of the war, in 1945, the company lost five of its chief plants and 75 per cent of its productive capacity. Since then, new plants and remodelled old ones have been built in West Germany to replace those lost in the East. Headquarters are now in Duesseldorf. Charts show the growth from 1885 to the present—the high in 1937 has now has regained. The 12 plants are pictured and an appendix contains actual samples of the various papers.

To Feldmuehle the paper industry is indebted for a superb book commemorating the 75th anniversary of an enterprise which through its multiple products serves all humanity.

Keep your eye on our Classified Advertising Section

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures
(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Dec. 17	Dec. 24	Dec. 31	Jan. 7, '61	Jan. 14
1960	92.8r	74.9r	59.5r	81.3	90.6
	Dec. 19	Dec. 26	Jan. 2, '60	Jan. 9	Jan. 16
1959	97.1	62.5	80.6	95.4	97.4

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	96.5	97.7	98.1	96.9	97.6	96.1	81.2	91.7	89.1	94.8	92.0	80.3‡	92.8‡
1961													

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1954	1955	1956	1957	1958	1959	1960	1961
Year to Date	93.3	92.1	98.1	91.6	83.1	86.4	96.4	85.7
Year Average	91.6	96.2	97.9	90.4	87.0	92.2	92.8	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	Dec. 17	Dec. 24	Dec. 31	Jan. 7	Jan. 14
1960	87	86	39	77	92
	Dec. 19	Dec. 26	Dec. 31	Jan. 1-9	Jan. 16
1959	98	78	44	80	97

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	92	95	94	93	94	92	78	94	88	93	86	73	89
1961													

‡ Preliminary.
† *Per cents of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	WEEK ENDING Jan. 14, 1961	WEEK ENDING Jan. 7, 1961	CUMULATIVE TO DATE Jan. 1, 1961 to Jan. 14, 1961
% Activity	92%	77%	86%
Total	305,418	167,049	472,465
Containerboard—Domestic Use.	153,761	76,705	230,467
Liner	99,604	50,518	150,123
Corrugating Material	48,615	23,966	72,581
Chip & Filler Board	5,542	2,221	7,763
Boxboard—Domestic Use	96,120	54,095	150,213
Folding	60,696	30,801	91,497
Set-Up	10,164	5,713	15,877
Special Food Board	25,260	17,581	42,839
Other Paperboard	55,537	36,249	91,785
Containerboard Type	25,567	18,916	44,482
Boxboard Type	29,970	17,333	47,303
Total Orders			
Received	294,387	207,300	
Unfilled End of Week	399,021	408,384	

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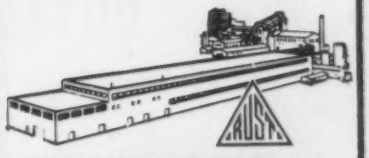
for Economic Growth



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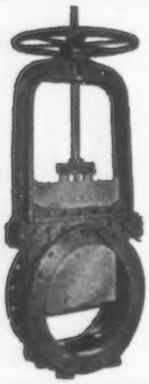

RECORD PAPER & PULP STOCK VALVES "BONNETLESS"
SELF CLEARING - - - "RESIDUE POCKETLESS TYPE"

METALS — I.B.B.M. all iron, bronze or stainless steels, body parts plain or rubber lined.

The photo of 24" Fig. 241 I. B. B. M. valve while illustrating the gate bottom wedge system for forced gate seating and "GUILLOTINE" edge for shearing fibre at seat also shows the packing box and yoke as separate units. Both adjustable.

- The "FAST THREADED" screw stem and ball bearing speeds valve operation.
- The packing box is extra deep, is adjustable and provided with specialized lubricated packings and special type gland and compression bolts.
- The yoke mountings are such that yokes for various methods of gate operation are interchangeable.
- Replaceable gate edge shoes are used in valves 10" and larger. These shoes are of special value when valves are installed stem and pipe horizontal.

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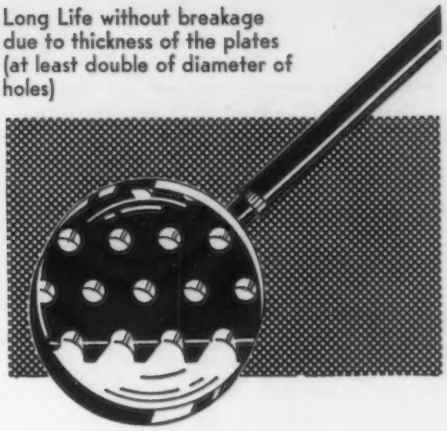
All kind of Fourdrinier Wires for Paper, Board and Cellulose Mills

Long Life without breakage due to thickness of the plates (at least double of diameter of holes)



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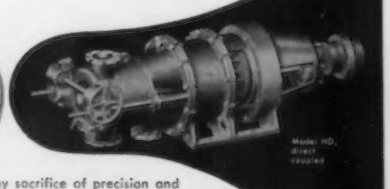

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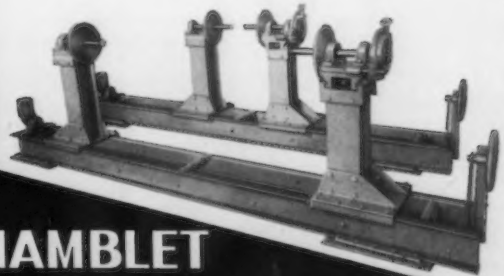

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F-20

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Technical Association of the Pulp and Paper Industry
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J-30

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TASK: Technical support in connection with sales of important raw materials to the West European paper industry.
Regular visits to customers together with representatives in all West European countries are essential.

REQUIRED: Basic knowledge of paper manufacture in general and special experience in the production of coated papers.
Applicants having worked several years in the paper trade will be given preference.
Excellent character, absolute reliability, pleasant and firm appearance, ability to plan and carry through independently a working program.
Languages: if possible German-English-French.

AGE: 30 to 40 years preferred, but not condition.

WE OFFER: Interesting, varied and largely independent activity,
Payment according to efficiency
2-3 months stay in the United States in order to get a thorough training and introduction into the new working field.

Application giving full details of career, copies of testimonials, photograph, references, specimen of hand writing and desired salary as well as earliest date of entry should be made to cipher . . . . 20198 Publicitas Olten, 15 rue Centrale, Lausanne, Switzerland.

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Help Wanted Advertisements continued on page 48

GIBBS-BROWER CO., INC.

10 Depot Plaza, White Plains, New York

Established 1898

Telephone—Rockwell 1-1130

BRANCHES: 400 Wash. Building, Madison 3, Wisconsin
Acepsa, Albeniz #4418, Mexico 15, D.F.
5270 E. Wash. Blvd., Los Angeles 22, Calif.

PRINTING PRESSES

1—30" 4 color Kidder Flexo Press
1—18" 6 color Heinrich, 4 Flexo 2 Gravure
1—41⅜" 5-color Staude Roto Gravure Press
1—51" 3-color Flexo Press
1—42" 4-color Hudson Sharp Central Impression Cylinder Flexo Press
1—42" 4-color Crawford Flexo Press
1—40" 4-color W & H Flexo Press
1—36" 6-color Cottrell Heinrich Flexo Press
1—33" 6-color Modern Clipper Flexo Press
1—33" 4-color Wolverine Hydro-Printer
1—32" 3 color Flexo Tail Printer
1—32" 4-color Schmutz Bag Press
2—Hy-Rotos: 1-26" 3-color & 1-30" 3-color
1—24" 5-color Kidder Calloprinter
1—24" 4-color Kohlbach Flexo Press with Stanford Web Guide and Tension Controls
1—14" 4-color Waldron Gravure Press
1—12" 3-Color Young Rotary Gummed Tape Press (Oil Ink)

POWER PAPER CUTTERS

SEYBOLDS:	56"-Dayton	44"-Dexter
	50"-Precision	44"-C&P
		44"-Oswego
	44"-Mod. "CF"	44"-10Z
75"-Oswego	40"-Mod. "CF"	38"-Oswego
64"-Precision	50"-C&P	32"-Oswego
57"-Oswego	50"-Dexter	32"-3Y

CAMACHINES

1—162" Type 10 Model 19 Shear Cut
1—102" #18
1—87" Type 12
1—72" Type 10 6A, Anti Friction Bearings
1—62" 26-3A
1—72" 10-10A
1—62" 10-11A
1—62"—28-3BT
1—52" & 1—42" Model 24-7
1—50" 28-3D
1—47", 50" & 62" Type 6
1—37" 26-3A
1—52", 10 5-A

OTHER SLITTERS

1—102" Langston, 60" Rewind Capacity
1—82" & 1—92" "BA" Langstons
1—73" Moore & White S & R—50" Rewind Cap.
1—60" & 1—40" Fales Model "C"
1—40" & 1—52" Fales Model "B"
1—60" Inman With Reeves Drive
1—52" Moitel (Shear-Cut)
2—40" Beck Razor Blade Slitters
1—40" & 1—60" Kidder SH 40" rewind
1—40" Langston "Type A" (Shear-Cut)
1—24" 1—30", 1—36" & 1—40" Kidder S.L. & 1—36" SLN

MISCELLANEOUS MACHINES

1—166" Clark-Aiken Duplex Sheeter w/layboy
1—100" & 60" Hamblet w/layboy
1—90" M&W Sheeter, Overlapping Delivery and Layboy
1—84" Hamblet Duplex Heavy Board Sheeter
1—78" M&W Sheeter & Layboy
1—75" Hamblet Duplex—Erie Layboy—Overlapping Delivery
2—72" Hamblet Single Sheeters with Layboys
1—64" Hamblet sheeter with layboy
1—48" Mamco Layboy
1—55" CSH-Beck Sheeter
1—45" CCSH Beck Sheeter
2—38" x 24" 4-Post Seybold Die Presses
5—Sheridans: 66" x 44", 60" x 30", 50" x 24", 44" x 22" & 36" x 18" and 1—Ford-Smith: 48" x 40" and 2—Hobbs 24" x 44"
Embossers 48" 55" Waldron & 50" Heavy Duty Hudson Sharp Tinter-Embosser
1—40½" Hudson Sharp Toilet Interfold
1—Multipath Bag Machine—4 Color Holweg Printer
1—Honsel Millinery Bag Machine (Model S-50) Wide Range & 3 Color Printer
1—Strachan & Henshaw Bag Machine—2-color Aniline Printer
1—Model 4 Potdevin Sack Machine
1—30" Schultz Rewinder with Electronic Drive
1—60" H/S Household Wax-Roll Winder
Lawtomatic Towel & Tissue Wrappers
1—Hayssen 4-roll Toilet Wrapper
1—34" Waxer with 4-Ton Refrig. Unit
1—New 3 Deck Hudson Sharp 10 x 10 Cocktail and Hanky Machine
2—Hudson-Sharp Gift Wrap Folders
1—40" International Paper Box Machine Co.'s Sheet-Fed Carton Waxer
1—46" Norwood Glassine Super Calender Stack

J-30

BEATERS

2—1500 lb. rag beaters, Valley Iron, bandless rolls, 54″ x 48″, cast iron tubs

CALENDER STACKS

1—3 roll 84″ face
1—4 roll 72″ face (Extra heavy duty)
1—5 roll 86″ face

CHIPPERS

1—96″ Murray 4 knife Chipper—anti-friction bearings
1—84″ 10 knife Carthage Chipper, Anti-friction bearings, with motor

COATER

1—42″ Chapman Extrusion Type Coater

CONSISTENCY REGULATOR

1—Poirier Stainless Steel, new condition

CRUSHER & HAMMERMILL

1—Murray Chip Crusher
1—Williams Hammermill
1—Jeffrey Shredder

CYLINDER MOLDS

5—36″ diameter x 75″ face, with couch rolls
1—36″ diameter x 82″ face
4—36″ diameter x 90″ face, with couch rolls
1—42″ diameter x 96″ face
2—42″ diameter x 106″ face
2—60″ diameter x 170″ face

DECKERS

2—IMPCO Deckers (Thickeners) 48″ x 120″ face, late type

DRIVES

1—Jones 21 H.P., ratio 10 to 1 (enclosed angle drive)
1—#4 Reeves Drive
2—Waterbury Hydraulic Variable speed line shaft drives (from 40 to 100 H.P.)
2—Falk Drives, 20 H.P. & 160 H.P.

DRYERS

1—16″ diameter x 54″ face (steel)
1—28″ diameter x 84″ face
1—28″ diameter x 48″ face
2—Calender Dryers, bronze, 30″ x 128″ with frames, gears & necessary rolls to make up the unit.
1—36″ diameter x 44″ face
5—36″ diameter x 76″ face
23—36″ diameter x 84″ face
14—48″ diameter x 48″ face with bearings
2—48″ diameter x 52″ face with frames, gears, bearings
2—48″ x 60″ face frames, gears & bearings
1—48″ x 96″ face
6—48″ diameter x 130″ face
1—60″ diameter x 92″ face, anti-friction bearings
1—73″ diameter x 66″ face, with bearings

EMBOSSING CALENDERS

1—43″ 3- roll Embossing Calender
1—48″ 2-roll Meadows Embossing Calender
1—51½″ 3-roll Smoothing Calender
1—57″ 3-roll Embossing Calender
1—62″ 2-roll Embosser
1—90″ 2-roll Smoothing Calender

FILTERS

1—Oliver Filter 8 ft. x 8 ft.
1—Dorr-Oliver Filter, 3 ft. dia. x 6 ft. face, stainless steel construction, with pump

FLAT SCREENS

1—12 Plate "Packer"
4—14 Plate IMPCO, bronze vats

JORDANS

2—#1 Jones High Speed Jordans, Stainless steel tackle, A. F. Bearings, motors.
1—#1 Jones High Speed Jordan
1—Jones Standard, new spare tackle, with 75 h.p. motor
1—Noble & Wood Monarch, Type D, anti-friction bearings
1—Noble & Wood Baby Jordan, anti-friction bearings, with 20 h.p. motor
1—#6 Miami, anti-friction bearings

KNIFE GRINDER

1—70″ Seybold

LABORATORY EQUIPMENT

1—4″ face x 36″ diameter Saveall
1—Washer for 5 lb. Beater
1—24″ Saveall, stainless steel
1—20″ Fourdrinier Wet End & Press Section
1—12″ x 12″ Valley Sheet Dryer
1—18″ x 20″ Williams Sheet Dryer
1—15 lb. E. D. Jones Beater
1—Noble & Wood Cycle Beater with motor & stand
1—1½ lb. Valley Iron Works Beater, motor and stand
1—Greene Freeness Tester
1—Cady Micrometer
7—Mullen Testers, motorized
1—2 qt. Auto Clave, Stainless Steel
1—Elmendorf Tear Tester
1—27″ High Solid Coater
1—Noble & Wood Baby Jordan, anti-friction bearings, with 20 h.p. motor
2—Emerson, Jr., No. 1 Jordans, anti-friction bearings

MISCELLANEOUS

1—Bird Centriffler, built 1958, new condition.
1—Shartle Hydrafuge, 1000 g.p.m. (with motor)

MOTORS

4—25 h.p. Westinghouse, totally enclosed, ball bearing, 705 r.p.m.

PRESSAFINER

1—7″ Pressafiner, stainless steel construction, New 1955, with new spare motor

PRESS ROLLS

2—Chilled iron, chrome plated 9″ x 72″
1—Chilled iron, chrome plated 10″ x 74″

PULPERS

1—#1 Jones Pulp Master

PUMPS

1—Economy Fan Pump 6000 g.p.m. 20′ head, 50 h.p. motor

REELS

1—72″ Downingtown Reel, 2 bowl
1—84″ 3 bowl revolving reel
1—86″ 2 bowl reel
1—100″ Rice Barton 2 bowl reel, heavy duty
1—116″ Downingtown, 2 bowl, anti-friction bearings
1—123″ 3 bowl Revolving Reel
1—134″ 2 drum

REFINERS

1—Rice Barton Dynofiner, details on request
1—12″ Wiener Refiner, with 200 h.p. motor
2—36″ Bauer double disc #185E Refiners, each with two 100 h.p. motors
1—#4 Dilts Hydra Finer

ROLLS

Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.)

ROTARY SCREENS

4—#2A Bird Rotary Screens, copper vats
7—Trimbey, Senior Knotter Screens
1—#2A—50 Bird, copper vat
2—APMEW Rotary Pulp Screens

SAVEALLS

2—#6 Bird Savealls
1—24″ Continuous Saveall, stainless steel
1—LaMort 48″ diameter x 82″ face cylinder mold
2—Savealls, cylinder molds, 42″ diameter x 106″ face, brand new vats
2—Savealls, Rice Barton, cast iron vats, cylinder molds 48″ diameter x 128″ face, complete with 18″ diameter couch rolls, all in very good condition

SHREDDERS

1—16″ "Swift" Paper Shredder
2—Taylor Stiles Rag Cutters

SLITTERS & WINDERS

1—26″ Cameron Type 26-2A, complete constant tension & electric eye
4—42″ Cameron Type 6
1—42″ Cameron Type 9
1—42″ Cameron Type 26-2A
1—42″ Cameron Type 40-2
1—50″ Cameron Type 6
2—52″ Cameron Type 9
1—62″ Cameron Type 6
1—72″ Cameron Type 28-3-D
1—86″ Two Drum Moore & White 50″ diameter rewind
1—96″ 4 drum Moore & White winder
1—64″ Waldron, Shear cut

SLITTING DEVICE

84″ Quick change slitting device shear cut, complete

STOCK PUMP

1—12 x 20 Shartle Triplex with spare parts

SUCTION COUCH SHELL

1—Downingtown suction couch shell only. 127½″ face 26″ diameter

SUCTION COUCH ROLL

1—Beloit 36″ diameter x 246″ face, SKF bearings

SUCTION FELT ROLL

1—Gilbert & Nash 122″ face

SUCTION PRESS ROLL

1—Sandusky 18″ dia. x 138″ face Suction Press Roll

SUPER CALENDER STACK

1—9 Roll 56″
1—13 roll 53″ Norwood, anti-friction bearings

TOILET WINDERS

1—72″ Hudson-Sharp (Surface type winder)

TRIMMERS

1—44″ Seybold Trimmer

VACUUM PUMPS

2—#3 Nash Hytor
1—#4 Nash Hytor
1—#7 Nash Hytor, with 75 h.p. synchronous motor
1—H-3 Nash
1—H-7 Nash
2—K-5 Nash
2—L-4 Nash
3—L-5 Nash
2—Connersville, 14 x 20

VATS

2—Brand new Downingtown Iron End Vats, for 42″ diameter x 112″ face cylinder molds. Will cut down to your size.

WET MACHINES

1—84″ IMPCO Wet Machine

YANKEE DRYERS

1—60″ diameter x 92″ face, anti-friction bearings
1—73″ diameter x 66″ face, with bearings
1—12 ft. diameter x 181½″ face

Paddy Ross, Pres.

J. J. ROSS COMPANY

377 Frelinghuysen Ave. Tel.—Bigelow 3-3720 Newark 12, N. J.

Help Wanted

CHEMISTS
PAPER CHEMISTS
CHEMICAL ENGINEERS

The Mead Corporation has challenging staff positions in its expanding Central Research and Development Laboratories for experienced men for positions in the areas of:

1. Specialty papers—physical chemistry interest with paper-making experience
2. Paper Technology — improvement of the physical properties of paper including wet end studies
3. Basic Research — chemical modifications of pulp, background in Polymer chemistry highly desirable
4. Coating — for both laboratory and mill assignments
5. Pulping and Bleaching — Fundamental and applied research in stock preparation

We offer the opportunity for recognition and growth with friendly working and living conditions. Chillicothe, a town of about 28,000 is less than an hour's drive to Columbus. Your resume for these or other available positions, will receive immediate, confidential attention.

For more information, call collect or write to:

Mr. H. Meilinger
Employment Supervisor
THE MEAD CORPORATION
Chillicothe, Ohio

J-30

TWO ENGINEERS

Current expansion program necessitates addition of one Mechanical and one Electrical Engineer. One to five years of design experience in heavy industrial or construction engineering. Excellent opportunity for individual development in one of the South's most progressive pulp and paper companies. Salary open. Liberal benefit program. Submit resume of qualifications and experience to

PERSONNEL MANAGER
HALIFAX PAPER COMPANY, INC.
ROANOKE RAPIDS, N. C.

F-6

BUY U. S.
SAVINGS BONDS

Help Wanted

INDUSTRIAL ENGINEER

Eight-ten years experience in methods work, economic studies, materials handling, capacity analysis and plant layout. Paper making and converting experience desirable but not essential. Must have ability to develop and complete major projects on own initiative. For large paper making and converting paper mill in N.E. Florida. Salary to $9,500. Give all past experience in first resume to Box 61-23, care Paper Trade Journal.

WANTED
Engineer for Sales Work at Midwest Headquarters

of one of the best known manufacturers of a product that is used on most all pulp and paper mill machinery.

Require engineering graduate with some paper mill engineering or maintenance experience.

Age 30 to 35, preferably married—not a requisite.

A real opportunity for the right man.

Address box 61-15
Care of PAPER TRADE JOURNAL

F-13

Situations Wanted

NEED HELP?
BLEACHED SULPHATE SUPERINTENDENT

—to insure your satisfaction,
will assume position to deliver
QUALITY PRODUCTION HARMONIOUSLY
on a limited time basis.

Box 61-24 Paper Trade Journal F-20

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Development, sales, liaison, production. Kraft, rope, manila, industrial and electrical. Matrix. Converting. Thirty years background. Prefer South. R. R. Woodhead, Box 42, Great Meadows, N. J.

F-20

CHEMICAL ENGINEER
KRAFT MILL OPERATING SUPERVISOR

Can produce results. Has 10 years start-up, operation and maintenance experience plus 10 more in responsible technical positions. Seeking new connection in mill. Also consider equipment or technical sales-service. Good references. Address Box 61-19 care Paper Trade Journal.

F-13

SUPERINTENDENT — Middle aged practical fine paper maker. Outstanding record of production and labor relations. Employed—wishes change for domestic or foreign opportunity. Address Box 61-17 care Paper Trade Journal.

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Situations Wanted

Production executive **— conversion of boards, paper & film. Well versed in heading up all production functions in an organization; or reorganization deal. Multiple manufacturing units. Employed — wishes change for challenging opportunity. Box No. 61-9 care Paper Trade Journal.**

J-30

PULP MILL SUPT. or CHIEF CHEMIST—Graduate Chemical Engineer with 15 years experience. 12 years pulp and paper. Also Naval Stores, Water, Sewage and Industrial Waste. Southeastern location preferred. Address Box 61-10 care Paper Trade Journal.

J-30

SUPT.: Twenty five years experience making tissue, towel, napkin, facial. Address Box 61-13 care Paper Trade Journal.

F-6

For Sale

FOR SALE

108" type CA Langston slitter, new 1941, with Langston type slitters, 50 HP motor and unwind stand.
62" Cameron 10-11 A score slitter, w.c. unwind, new 1946, rewind 36".
52" Cameron 10-10 A, new 1940, score slitters
92" Cameron 10-6, integral type score slitters, new 1941, rewind 30", unwind stand.
2—42" type 6 Camerons rebuilt.
1—42" type 6 Cameron, new 1941, integral score type slitters.
62" Cameron type 6.
18" Cameron 22-2K.
18" Johnston uniform tension unwind.
52" Lawson trimmer, new 1952.
64" Hamblet sheet cutter, new 1947.
64" Hamblet sheet cutter, Moore & White layboy.
84" Box frame Hamblet cutter with layboy.
Section 32 dryers, Rice Barton, 60" x 157½", with frames, gears, bearings, top and bottom felt equipment. 4—48" felt dryers, 1 lead dryer.
Type 18, 160" Cameron winder, w.c. unwind, constant tension unit.
152" type DA Langston, with score slitters, rewind 40".
84" Pusey & Jones two drum winder, drums 14 x 84", rewind 43".
42 x 150" Black & Clawson reel, new 1941, with seven anti friction a.f. spools.
106" B & S reel, 42" drum, three spools.
2—Nine roll 106" calenders, w.c. bearings.
13—B & C dryers 48 x 134", new 1941.
16—B & C dryers, new 1941, 42 x 102", with frames, gears, bearings.
45—Beloit dryers 42 x 96" with frames, gears, bearings, bottom felt.
7—Twelve plate Impco bronze vat flat screens, s.s. plates.
1—Ten plate Sandy Hill roller shoe screen, new 1953.
5—roll 144" box frame calender.
104" x 65 ft. Fourdrinier with 26" Beloit cantilever couch.
24" x 112" Downingtown suction couch.
30" x 162" Downingtown suction couch.
170" x 70 ft. R. B. Fourdrinier, 30" couch.
200" x 65 ft. Beloit Fourdrinier with 30" Beloit cantilever suction couch.
4—Beloit rubber covered suction press rolls, 34" x 235" drilled face.
2—Beloit suction couches 40" x 214" drilled face, new 1948.
65—Moore & White dryers 36 x 84" d.d. frame, gears, bearings.
20—Pusey & Jones dryers 48 x 132".
7—Rice Barton dryers 48 x 152".
5—Rice Barton dryers 60 x 164" with bearings.

FRANK H. DAVIS COMPANY, INC.
175 Richdale Ave., Cambridge, 40, Mass.

F-13

Use the Classified Ads For Best Results.

For Sale

FOR SALE

ONE 500 KW, 80% P.F., 480/3/60; 3600 RPM WESTINGHOUSE GENERATOR WITH DIRECT CONNECTED EXCITER, COUPLED TO MOORE BACK PRESSURE STEAM TURBINE RATED 500 KW, 300#, INLET, 100# EXHAUST. UNIT COMPLETE WITH OIL COOLER, ELECTRIC SWITCHBOARD, VOLTAGE REGULATOR, ETC.

ONE 200 KW, 100% P.F., 440/3/60, 600 RPM ALLIS CHALMERS BELT DRIVEN GENERATOR, TWO PEDESTAL BEARINGS, BASE & SLIDE RAILS.

ONE 200 KW, 100% P.F., 480/3/60, 900 RPM ALLIS CHALMERS BELT DRIVEN GENERATOR, END SHIELD BEARINGS WITH 3RD PEDESTAL BEARING ON COMMON BASE FOR DRIVE PULLEY, COMPLETE WITH DIRECT CONNECTED EXCITER & SLIDE RAILS.

ONE 100 KW, 100% P.F., 480/3/60, 900 RPM CROCKER-WHEELER BELT DRIVEN GENERATOR, END SHIELD BEARINGS.

ONE 1000 HP, 100% P.F., 2200/3/60, 225 RPM GENERAL ELECTRIC SYNCHRONOUS MOTOR, TWO PEDESTAL BEARINGS, FABRICATED STEEL BASE, COMPLETE WITH ELECTRIC MACHINERY ENCLOSED FULL VOLTAGE MAGNETIC STARTER.

CONTACT:
RICHARD A. NEWCOMB
PLANT ENGINEER
SHAWANO PAPER MILLS
SHAWANO, WISCONSIN
Phone Lakeview 6-2181

J-30

FOR SALE
LOW PRICES

2—86" B. & S. Wet Machines; Bronze and Rubber Press Rolls; A.F. Bearings on Couches and Cylinder Molds. Complete with Gear Drives. Excellent Condition.

RUDERMAN MACHINERY EXCHANGE
Gouverneur, New York
Phone 333-334

TF

Wanted

WANTED TO BUY
TWO USED
SELECTIFIER SCREENS.

SEND DETAILS TO BOX 61-22 c/o PAPER TRADE JOURNAL. J-30

Wanted

WOULD LIKE TO BUY OR LEASE TISSUE MILL LOCATED IN NEW ENGLAND OR NEW YORK STATE. GOOD CONDITION. READY TO RUN. CAPACITY 15-20 TONS. WRITE ALL DETAILS.

BOX #61-14, CARE PAPER TRADE JOURNAL.

J-30

Wanted

NAPKIN FOLDER WANTED

Need napkin machine to produce ¼ fold napkins with 13½" cutoff length. Can be either 2 or 3 decker and with or without embosser.

Peavey Paper Mills
Ladysmith, Wisconsin F-6

WANTED

One new or used plug and shaft for Jones Majestic Jordan, slotted for ⅜" box. Address Box 61-20 care Paper Trade Journal.

F-6

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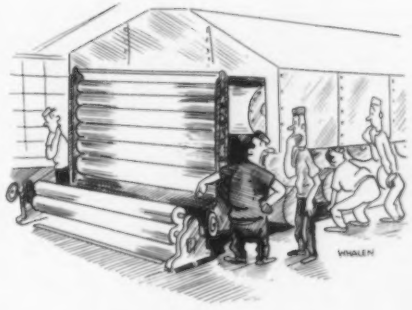
from
PAPER TRADE JOURNAL



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At $1.25 a copy, it works out to about one cent a laugh. . . . Reduced prices on bulk orders. Remittance with order, please.

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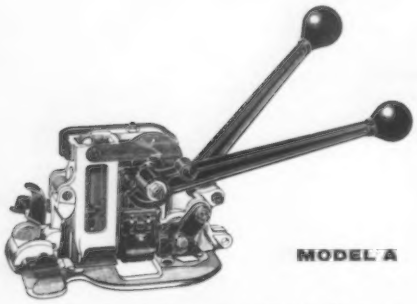

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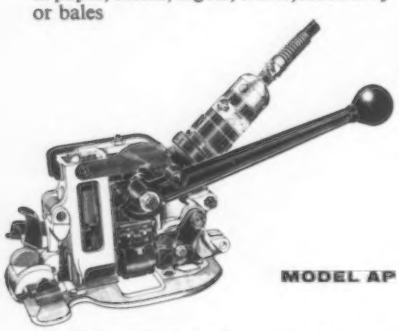

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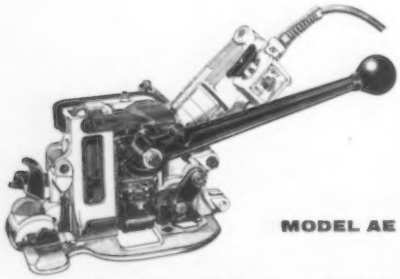

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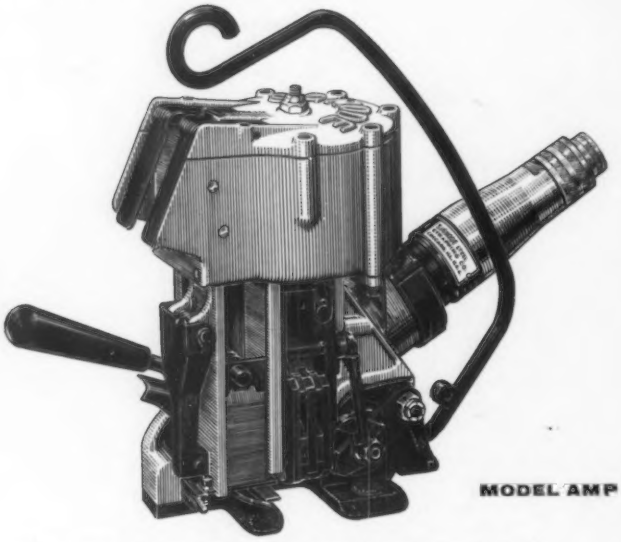

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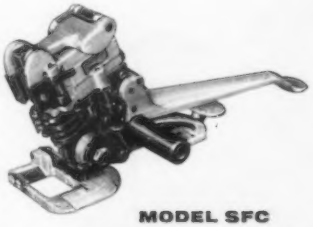

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